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**Y-12
NATIONAL
SECURITY
COMPLEX**

**CALENDAR YEAR 2001
GROUNDWATER MONITORING REPORT,
U.S. DEPARTMENT OF ENERGY
Y-12 NATIONAL SECURITY COMPLEX,
OAK RIDGE, TENNESSEE**

March 2002

Prepared by

**AJA TECHNICAL SERVICES, INC.
Under Subcontract No. 4300012529**

for the

**Environmental Compliance Department
Environment, Safety, and Health Organization
Y-12 National Security Complex
Oak Ridge, Tennessee 37831**

Managed by

**BWXT Y-12, L.L.C.
for the U.S. Department of Energy
Under Contract No. DE-AC05-00OR22800**

**MANAGED BY
BWXT Y-12, LLC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY**

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Acronyms and Abbreviations

ACO	Analytical Chemistry Organization
BCK	Bear Creek Kilometer
BCV	Bear Creek Valley
Bear Creek Regime	Bear Creek Hydrogeologic Regime
BJC	Bechtel Jacobs Company LLC
CERCLA	Comprehensive Environmental Response, Compensations, and Liability Act
Chestnut Ridge Regime	Chestnut Ridge Hydrogeologic Regime
CRSDB	Chestnut Ridge Sediment Disposal Basin
CRSP	Chestnut Ridge Security Pits
CY	calendar year
DOE	U.S. Department of Energy
DQO	data quality objective
East Fork Regime	Upper East Fork Poplar Creek Hydrogeologic Regime
EMWMF	Environmental Management Waste Management Facility
ft	feet
GWPP	Y-12 Groundwater Protection Program
LMES	Lockheed Martin Energy Systems, Inc.
NT	northern tributary (of Bear Creek)
OF	outfall (Kerr Hollow Quarry and subsurface drains in Y-12)
ORR	Oak Ridge Reservation
POC	point-of-compliance
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
REDOX	oxidation-reduction potential
ROD	record of decision (CERCLA)
SAP	sampling and analysis plan
SCR	south Chestnut Ridge
SS	south side (of Bear Creek)
SWDF	Solid Waste Disposal Facility
TDEC	Tennessee Department of Environment and Conservation
UEFPC	Upper East Fork Poplar Creek
VOC	volatile organic compound
WRRP	Water Resources Restoration Program
Y-12	Y-12 National Security Complex

1.0 INTRODUCTION

This report contains the groundwater and surface water monitoring data that were obtained during calendar year (CY) 2001 at the U.S. Department of Energy (DOE) Y-12 National Security Complex (hereafter referenced as Y-12) in Oak Ridge, Tennessee. The monitoring data were obtained from groundwater and surface water sampling locations within three hydrogeologic regimes at Y-12 (Figure A.1). The Bear Creek Hydrogeologic Regime (Bear Creek Regime) encompasses a section of Bear Creek Valley (BCV) between Old Bear Creek Road at the west end of Y-12 and the west end of the Bear Creek Watershed (directions are in reference to Y-12 grid system). The Upper East Fork Poplar Creek Hydrogeologic Regime (East Fork Regime) encompasses the Y-12 industrial facilities and support structures in BCV west of Scarboro Road. The Chestnut Ridge Hydrogeologic Regime (Chestnut Ridge Regime) encompasses a section of Chestnut Ridge west of Scarboro Road and east of Dunaway Branch southwest of Y-12. The CY 2001 monitoring results for the groundwater and surface water sampling locations in each hydrogeologic regime were obtained under the Y-12 Groundwater Protection Program (GWPP), which is managed by BWXT Y-12, L.L.C., and the DOE Oak Ridge Reservation (ORR) Water Resources Restoration Program (WRRP), which is managed by Bechtel Jacobs Company LLC (BJC).

Groundwater and surface water sampling and analysis activities performed during CY 2001 specifically for the purposes of DOE Order 5400.1 (*General Environmental Protection Program*) were implemented in accordance with the Y-12 GWPP sampling and analysis plan (SAP) for CY 2001 (Lockheed Martin Energy Systems [LMES] 2000a), as modified by applicable addenda (Table B.1), hereafter referenced as DOE Order 5400.1 monitoring. As described in the *Environmental Monitoring Plan for the Oak Ridge Reservation* (DOE 2001), DOE Order 5400.1 requires groundwater and surface water quality monitoring: (1) in areas which are, or could be, affected by operations at Y-12 (DOE Order 5400.1 site surveillance monitoring) and (2) in areas where contaminants from Y-12 are most likely to migrate beyond the boundaries of the ORR (DOE Order 5400.1 exit pathway/perimeter monitoring).

Groundwater and surface water sampling and analysis activities associated with the following programs were implemented under the WRRP in accordance with the respective SAP for fiscal years 2001 (BJC 2000) and 2002 (BJC 2001): (1) Resource Conservation and Recovery Act (RCRA) post-closure detection monitoring and RCRA post-closure corrective action monitoring (collectively referenced as RCRA monitoring), as specified in applicable RCRA post-closure permits issued by the Tennessee Department of Environment and Conservation (TDEC); (2) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial effectiveness monitoring (CERCLA monitoring), as specified in the applicable record of decision (ROD) or decision documents pending final approval (referenced as CERCLA ROD monitoring), and CERCLA pre-remediation baseline water quality monitoring (referenced as CERCLA baseline monitoring), and (3) detection monitoring in accordance with site-specific operating permits issued by the TDEC for several nonhazardous solid waste disposal facilities (SWDFs) located in the Chestnut Ridge Regime (referenced as SWDF detection monitoring).

The following sections of this report provide details regarding the CY 2001 groundwater and surface water monitoring activities in the Bear Creek, East Fork, and Chestnut Ridge Regimes. Section 2 identifies the sampling locations in each hydrogeologic regime and the corresponding sampling frequency during CY 2001, along with the associated quality assurance/quality control (QA/QC) sampling. Section 3 describes groundwater and surface water sample collection and Section 4 identifies the field measurements and laboratory analytes for each sampling location. Section 5 outlines the data management protocols and data quality objectives (DQOs). Section 6 describes the groundwater elevation monitoring in each regime during CY 2001 and Section 7 lists the documents cited for more detailed operational, regulatory, and technical information.

The narrative sections of the report reference several appendices. Figures (maps and diagrams) and large data tables (at least one page in length) are presented in Appendix A and Appendix B, respectively. Monitoring well construction details are provided in Appendix C. Results of field measurements and laboratory analyses of the groundwater and surface water samples collected during CY 2001 are presented in Appendix D (Bear Creek Regime), Appendix E (East Fork Regime and surrounding areas), and Appendix F (Chestnut Ridge Regime). Appendix G contains data for QA/QC samples associated with monitoring performed by the Y-12 GWPP.

2.0 SAMPLING LOCATIONS AND FREQUENCY

Groundwater and surface water quality monitoring at Y-12 during CY 2001 involved a total of 153 monitoring wells (complete construction details for each well are provided in Appendix C), 18 springs, and 35 surface water locations in the Bear Creek Regime (Figure A.2), East Fork Regime (Figure A.3), and Chestnut Ridge Regime (Figure A.4).

2.1 BEAR CREEK REGIME

As shown below in Table 1, a total of 56 monitoring wells, seven springs, and 19 surface water stations in the Bear Creek Regime were sampled during CY 2001 for the purposes of DOE Order 5400.1 monitoring, RCRA monitoring, and CERCLA monitoring.

Table 1. CY 2001 sampling locations in the Bear Creek Regime

Monitoring Driver	Monitoring Wells	Springs	Surface Water Stations
DOE Order 5400.1	32	3	6
	8	0	0
	22	6	14
Totals:	56	7	19

Note: Six wells, two springs, and one surface water station serve multiple monitoring purposes (see Table B.2).

Samples were collected semiannually during CY 2001 from most of the sampling locations; four wells and four surface water stations were sampled during only one quarter of CY 2001, and 13 wells associated with the Environmental Management Waste Management Facility (EMWMF) were sampled during all four quarters of the year (Table B.2).

Twenty-eight monitoring wells in the Bear Creek Regime were sampled for the specific purposes of DOE Order 5400.1 site surveillance monitoring during CY 2001 (Table B.2 and Figure A.2). Sixteen of these wells are located near waste management facilities in BCV, including the primary sources of groundwater contamination in the regime (S-3 Site, Oil Landfarm waste management area, and Bear Creek Burial Grounds). The remaining wells are components of three Exit Pathway Pickets in the regime: Picket A (four wells) is located about 1,600 feet (ft) west of the Bear Creek Burial Grounds; Picket B (four wells) is located about 2,000 ft west of the Oil Landfarm; and Picket C (four wells) is located about 3,000 ft west of the S-3 Site (Figure A.2). The wells in each Exit Pathway Picket are completed at various depths along strike-normal transects across the Maynardville Limestone, which is the primary groundwater migration pathway in the Bear Creek Regime.

Samples were collected from three springs and six surface water sampling stations in the Bear Creek Regime for the purposes of DOE Order 5400.1 exit pathway/perimeter monitoring during CY 2001 (Table B.2 and Figure A.2). The springs, which discharge into Bear Creek from the south side (SS) of the creek channel, are located southwest (hydraulically downgradient) of the S-3 Site (SS-1), the Oil Landfarm (SS-4), and the Bear Creek Burial Grounds (SS-5). The surface water stations, as designated by the Bear Creek kilometer (BCK) value measured upstream from the confluence of Bear Creek and East Fork Poplar Creek, are located north of Pine Ridge (BCK-00.63); near the west end of BCV (BCK-04.55); about 6,200 ft (BCK-07.87) and 1,600 ft (BCK-09.40) downstream of the Bear Creek Burial Grounds; about 3,600 ft downstream of the S-3 Site (BCK-11.97); and in a northern tributary (NT) of Bear Creek (NT-01) about 1,500 ft west of the S-3 Site (Figure A.3). Note that surface water samples were not collected from Bear Creek at station BCK-10.40 as planned in the CY 2001 SAP (LMES 2000a) because this section of the creek was dry during each semiannual sampling event (Table B.2 and Figure A.3).

Eight monitoring wells in the Bear Creek Regime were sampled for the specific purposes of RCRA post-closure corrective action monitoring during CY 2001 (Table B.2). These wells include a background well located hydraulically upgradient of contaminated groundwater in the regime (GW-115); point-of-compliance (POC) wells located downgradient of the S-3 Site (GW-276), the Oil Landfarm (GW-008), and the Bear Creek Burial Grounds (GW-046); and four plume boundary wells that comprise Exit Pathway Picket W, which is located about 6,500 ft west of the Bear Creek Burial Grounds (Figure A.2). Monitoring results for the wells located at Exit Pathway Picket W also serve the purposes of DOE Order 5400.1 exit pathway/ perimeter monitoring (Table B.2).

Twenty-two monitoring wells, six springs, and 14 surface water stations in the Bear Creek Regime were sampled for CERCLA monitoring purposes during CY 2001 (Table B.2 and Figure A.2). Fourteen monitoring wells at the EMWMF, four surface water stations located near the Bear Creek Burial Grounds (NT-07, NT-08, NT-8E, and NT-8W), and one surface water station near the White Wing Scrap Yard (ET-4) were sampled for CERCLA baseline monitoring purposes. Eight monitoring wells, six springs, and nine surface water stations were sampled for the purposes of CERCLA ROD monitoring; the monitoring wells are located along contaminant migration pathways hydraulically downgradient of the S-3 Site (GW-526 and GW-835), the Boneyard/Burnyard (GW-704 and GW-706), and the Bear Creek Burial Grounds (GW-077, GW-078, GW-079, and GW-080).

2.2 EAST FORK REGIME

As shown below in Table 2, a total of 49 monitoring wells, two springs, and 10 surface water stations in the East Fork Regime (and surrounding areas) were sampled during CY 2001 for the purposes of DOE Order 5400.1 monitoring, RCRA monitoring, and CERCLA monitoring.

Table 2. CY 2001 sampling locations in the East Fork Regime, north of Pine Ridge, and in Union Valley

Monitoring Driver	Monitoring Wells	Springs	Surface Water Stations
DOE Order 5400.1	30	0	6
RCRA	5	0	0
CERCLA	15	2	4
Totals:	49	2	10

Note: Well GW-722 serves multiple monitoring purposes (see Table B.3).

Forty-eight of these sampling locations lie within the boundaries of the East Fork Regime (Figure A.3), which is divided into the three major areas for the purposes of this report: the western Y-12 area between Old Bear Creek Road and grid coordinate easting 55,000; the central Y-12 area between grid coordinate eastings 55,000 and 62,000; and the eastern Y-12 area between grid coordinate easting 62,000 and Scarboro Road. The other thirteen CY 2001 sampling locations lie outside the boundaries of the regime, including six wells and two springs located in Union Valley east the ORR boundary at Scarboro Road (Figure A.3), and five surface water stations located in drainage features along the ORR boundary on the north side of Pine Ridge (Figure A.4). Samples were collected at least semiannually from each CY 2001 sampling location; three of the monitoring wells were sampled quarterly and two wells were sampled three times during the year (Table B.3).

Twenty-one monitoring wells in the East Fork Regime were sampled during CY 2001 for the specific purposes of DOE Order 5400.1 site surveillance monitoring (Table B.3 and Figure A.3): three wells located within the western Y-12 area, 13 wells located within the central Y-12 area, and five wells located in the eastern Y-12 area.

Nine monitoring wells and six surface water locations were sampled during CY 2001 for the purposes of DOE Order 5400.1 exit pathway/perimeter monitoring in the East Fork Regime (Table B.3 and Figure A.3). The monitoring wells are located at the east end of Y-12 and next to Upper East Fork Poplar Creek (UEFPC) in the gap through Pine Ridge northeast of Y-12. One of these wells (GW-722) is equipped with a dedicated multiport Westbay™ sampling system, with sampling ports set at ten discrete depths intervals in the well (Figure A.5). Surface water samples were collected from a location (LRSPW) at the exit point of the New Hope Pond Distribution Channel underdrain (Figure A.3) and from five tributaries (GHK2.51ESW, GHK2.51WSW, NPR07.0SW, NPR12.0SW, and NPR23.0SW) located north of Pine Ridge (Figure A.4).

A total of six wells were sampled for the specific purposes of RCRA post-closure corrective action monitoring in the East Fork Regime during CY 2001. These wells include a background well (GW-115) which is located about 500 ft north (upgradient) of the S-3 Site in the Bear Creek Regime (Figure A.2); one POC well (GW-108) which is located in the western Y-12 area about 800 ft southeast of the S-3 Site; and four plume delineation wells (GW-193, GW-605, GW-606, and GW-733) which are located several thousand feet east-southeast of the S-3 Site (Figure A.3).

Fifteen monitoring wells, two springs and four surface water stations were sampled during CY 2001 for CERCLA monitoring purposes (Table B.3). Six monitoring wells and two springs located in Union Valley east of the ORR boundary along Scarboro Road (Figure A.3), and seven monitoring wells (GW-151, GW-154, GW-382, GW-722, GW-733, GW-762, and GW-832) in the eastern Y-12 area were sampled for CERCLA ROD monitoring purposes. Sampling locations used for CERCLA baseline monitoring include two monitoring wells located in the western Y-12 area (GW-253 and GW-618) and four surface water stations: Outfall (OF) 51, OF 200, and Station 8 located in the central Y-12 area, and Station 17 located in the eastern Y-12 area.

2.3 CHESTNUT RIDGE REGIME

As shown below in Table 3, a total of 48 monitoring wells, nine springs, and seven surface water stations in the Chestnut Ridge Regime were sampled during CY 2001 for the purposes of DOE Order 5400.1 monitoring, SWDF detection monitoring, RCRA monitoring, and CERCLA monitoring.

Table 3. CY 2001 sampling locations in the Chestnut Ridge Regime

Monitoring Driver	Monitoring Wells	Springs	Surface Water Stations
DOE Order 5400.1	8	6	4
SWDF	22	1	0
RCRA	18	0	0
CERCLA	6	2	3
Totals:	48	9	7

Note: Six wells serve multiple monitoring purposes (see Table B.4).

Groundwater samples were collected at least semiannually during CY 2001 from all of the monitoring wells. Three wells were sampled during three quarters of CY 2001 and two wells were sampled during each quarter of the year (Table B.4). Samples were collected from the springs and surface water stations during seasonally wet (winter/spring) and seasonally dry (summer/fall) flow conditions, except for two springs and two surface water stations that were sampled only once during the year (Table B.4).

Eight monitoring wells in the Chestnut Ridge Regime were sampled for the purposes of DOE Order 5400.1 site surveillance monitoring during CY 2001 (Table B.4 and Figure A.6). Six of these wells are located near the Chestnut Ridge Security Pits (CRSP), one well (GW-514) is north of the Filled Coal Ash Pond, and one well (GW-241) is south of the Chestnut Ridge Sediment Disposal Basin (CRSDB).

Six springs and four surface water stations were sampled during CY 2001 for the purposes of DOE Order 5400.1 exit pathway/perimeter monitoring in the Chestnut Ridge Regime (Table B.4). The springs are located about 1,000 ft southeast of Industrial Landfill II (SCR2.1SP); in Bethel Valley about 2,500 ft west of Rogers Quarry (SCR2.2SP); about 1,600 ft downstream (south) of the Filled Coal Ash Pond (SCR3.4SP); and about 1,600 ft north (SCR5.1SP), about 200 ft west (SCR5.2SP), and 1,200 ft south (SCR5.4SP) of Kerr Hollow Quarry (Figure A.6). Tributaries on south Chestnut Ridge (SCR) are numbered in ascending order from west to east (SCR1 through SCR5), and the surface water sampling stations (SCR1.5SW, SCR2.2SW, SCR4.4SW, and SCR4.2SW) are located in main channels along Bethel Valley Road where surface water exits the Chestnut Ridge Regime (Figure A.6).

Twenty-two monitoring wells and one spring in the Chestnut Ridge Regime were sampled during CY 2001 for the purposes of SWDF detection monitoring (Table B.4 and Figure A.6): four wells at Industrial Landfill II; five wells at Industrial Landfill IV; five wells at Industrial Landfill V; four wells at Construction/Demolition Landfill VI; and four wells at Construction/Demolition Landfill VII. The spring (SCR4.3SP), which was sampled for the purposes of SWDF detection monitoring at Industrial Landfill V, is located about 2,400 ft southeast of the site. At the request of the TDEC, samples were collected quarterly from well GW-305 at Industrial Landfill IV during CY 2001 because the nickel concentration reported for the sample collected in July 1999 exceeded the Groundwater Protection Standard defined in the operating permit for the site (TDEC 1999). Note that the SWDF detection monitoring results for wells GW-521, GW-557, GW-798, GW-799, and GW-801 (Figure A.6) also serve the purposes of RCRA post-closure corrective action monitoring at the CRSP (Table B.4).

Five monitoring wells in the Chestnut Ridge Regime were sampled during CY 2001 for the specific purposes of RCRA post-closure corrective action monitoring at the CRSP (Table B.4). These wells include two POC wells (GW-177 and GW-609) located within 800 ft of the site and three plume delineation wells: one at the Chestnut Ridge Borrow Area Waste Pile (GW-301) about 3,000 ft east of the site, one at the

Construction/Demolition Landfill VII (GW-798) about 1,500 ft southeast of the site, and one at the Filled Coal Ash Pond (GW-831) about 2,000 ft southwest of the site (Figure A.6).

Nine monitoring wells in the Chestnut Ridge Regime were sampled during CY 2001 for the purposes of RCRA post-closure detection monitoring at the CRSDB and Kerr Hollow Quarry (Table B.4 and Figure A.6). The RCRA monitoring well network at the CRSDB includes one well (GW-159) located hydraulically upgradient (northwest) of the site and three POC wells (GW-156, GW-731, and GW-732) to the east-southeast (hydraulically downgradient) of the site. Two upgradient/background wells (GW-142 and GW-231) and three downgradient POC wells (GW-143, GW-144, and GW-145) comprise the RCRA monitoring well network at Kerr Hollow Quarry. Four replicate groundwater samples were collected from each of the RCRA detection monitoring wells during four consecutive days in April 2001. However, replicate sampling at each site was discontinued in accordance with TDEC approval in July 2001 (TDEC 2001) and only one sample was collected from the wells in October 2001 (Table B.4).

Six monitoring wells at the United Nuclear Corporation Site and OF-301 at Kerr Hollow Quarry were sampled during CY 2001 for the purposes of the respective CERCLA ROD for each site (Table B.4 and Figure A.6). Additionally, two surface water stations located in McCoy Branch (MCK 2.0 and MCK 2.05) and two springs (SCR1.25SP and SCR2.1SP) were sampled for CERCLA baseline monitoring purposes (Table B.4). McCoy Branch (SCR3) drains the central part of the regime, and the springs discharge into SCR1 and SCR2 in the southwestern portion of the regime (Figure A.6).

2.4 QUALITY ASSURANCE/QUALITY CONTROL SAMPLING

As shown below in Table 4, the QA/QC samples associated with the groundwater and surface water sampling performed under the Y-12 GWPP during CY 2001 include a total of 54 method (laboratory) blanks, 95 trip blanks, four field blanks, two equipment rinsate samples, and 22 duplicate groundwater and surface water samples.

Table 4. QA/QC samples analyzed in CY 2001 for the Y-12 GWPP

Sample Type	Total Number of Samples per Quarter of CY 2001				Annual Total
	First	Second	Third	Fourth	
Trip Blank Samples	33	19	27	16	95
Method Blank Samples	20	9	15	10	54
Equipment Rinsate Samples	1	0	1	0	2
Field Blank Samples	1	1	1	1	4
Duplicate Groundwater/Surface Water Samples	7	5	6	4	22

The blanks and equipment rinsate samples were prepared and analyzed as specified in the *Quality Assurance Plan for the Analytical Chemistry Organization* (BWXT Y-12 2001b). Results for the blank samples assess the environmental conditions in the field and laboratory under which associated groundwater and surface water samples were collected, transported, stored, and analyzed. Trip blanks were samples of deionized water prepared in the laboratory and transported to the field and then to the laboratory in coolers containing groundwater and surface water samples. Field blanks were samples of deionized water that was transported to the field in a sealed glass container and transferred to sample bottles at selected monitoring wells and then transported in the cooler with other samples from the location to the laboratory. Method blanks were samples of deionized water that were analyzed along with one or more associated groundwater or surface water

samples. Equipment rinsates were samples of the deionized water from the final rinse of the decontaminated equipment after sampling was completed at WestbayTM well GW-722.

Method blanks, trip blanks, field blanks, and equipment rinsate samples were analyzed for volatile organic compounds (VOCs); equipment rinsates also were analyzed for miscellaneous analytes (e.g., suspended solids), major ions, trace metals, and radioanalytes. Analytical results for the QA/QC blanks and equipment rinsate samples are summarized in Appendix G.

A total of 22 field duplicate samples were collected for QA/QC purposes from sampling locations monitored under management of the Y-12 GWPP during CY 2001. These locations include six wells, one surface water station, and one spring in the Bear Creek Regime (Table B.2); nine wells in the East Fork Regime and one surface water station located north of Pine Ridge (Table B.3); and two wells and one spring in the Chestnut Ridge Regime (Table B.4). The duplicate samples were analyzed for the same constituents and parameters specified for the location from which they were collected; analytical results are presented with the regular sample results in Appendices D, E, and F.

3.0 SAMPLE COLLECTION AND HANDLING

The following discussion pertains to the groundwater and surface water sampling activities managed by the Y-12 GWPP during CY 2001. Personnel from the Sampling and Environmental Support Department of the Y-12 Analytical Chemistry Organization (ACO) were responsible for collection, transportation, and chain-of-custody control of the groundwater and surface water samples. Sampling was performed in accordance with the most recent version of the technical procedures approved by the Y-12 GWPP Manager (LMES 1999a and BWXT Y-12 2000a). All samples were collected in appropriate containers, labeled, logged, placed in ice-filled coolers, and transported to the designated ACO laboratory in accordance with chain-of-custody control requirements.

Unfiltered samples were collected from the monitoring wells, springs, and surface water stations in each hydrogeologic regime during CY 2001. Dedicated sampling equipment (Well WizardTM) was used to obtain the samples from each of the monitoring wells in the Bear Creek and Chestnut Ridge hydrogeologic regimes, and from all but one of the monitoring wells in the East Fork Regime (GW-722). Samples were collected from these wells using the low-flow minimal drawdown sampling method. Under this method, which is intended to obtain representative groundwater samples from discrete depth intervals without including stagnant water in the well casing, the well is pumped at a flow rate which is low enough (<300 milliliters per minute) to minimize drawdown of the water level in the well (<0.1 ft per quarter-hour). At five-minute intervals after the water-level drawdown has stabilized, field personnel record measurements of the pH, conductivity, temperature, oxidation-reduction potential (REDOX), and dissolved oxygen of the groundwater pumped from the well. Samples of the groundwater in the well are collected once the field measurements for each parameter show minimal variation over four consecutive readings.

As noted in Section 2.2, well GW-722 is equipped with a dedicated (WestbayTM) multi-port sampling apparatus. Groundwater samples were collected from this well in accordance with the most recent and approved version of the standard operating procedures for the multiport sampling equipment (LMES 2000b and 2000c). One or more 250-milliliter non-vented stainless steel sample collection bottles were used to obtain groundwater samples from the sampling ports. The sample collection bottles were lowered to the designated sampling port; the sampling port valve was opened and the bottle was allowed to fill with groundwater; the filled bottle was retrieved to the surface; and the contents were poured into the appropriate laboratory sample bottle(s). The

sample collection bottles were lowered, filled, and retrieved as many times as needed to completely fill the laboratory sample bottles. Groundwater in the first sample collection bottle retrieved from each sampling port was used as a “formation rinse” to obtain field measurements and to condition the sample collection bottle.

4.0 FIELD MEASUREMENTS AND LABORATORY ANALYTES

The following discussion pertains to the field measurements and laboratory analytes associated with the CY 2001 groundwater and surface water sampling activities in the Bear Creek, East Fork, and Chestnut Ridge hydrogeologic regimes that were performed by the Y-12 GWPP (functionally equivalent field measurements and laboratory analyses were performed by the WRRP during CY 2001).

Field personnel measured the depth to the static water surface before sampling groundwater in each monitoring well, and recorded field measurements of pH, temperature, conductivity, dissolved oxygen, and REDOX for each groundwater and surface water sampling location (Table B.5). Field measurements were obtained in accordance with the most recent and approved technical procedures (LMES 1999b, BWXT Y-12 2000b, and BWXT Y-12 2001a). The field measurements recorded for the sampling locations in each regime are presented in Appendices D.1, E.1, and F.1.

All of the CY 2001 groundwater samples and surface water samples were analyzed for: (1) miscellaneous laboratory analytes—pH, conductivity, turbidity, total suspended solids, and total dissolved solids; (2) major ions and trace metals; (3) VOCs; and (4) gross alpha and gross beta activity (Table B.5). Laboratory analyses of the samples were performed by the Y-12 ACO laboratories in accordance with the analytical methods and procedures listed in Table B.5. Analytical results are presented in Appendix D (Bear Creek Regime), Appendix E (East Fork Regime), and Appendix F (Chestnut Ridge Regime). Note that each data appendix contains the analytical results only for laboratory analytes that were detected in at least one sample from the CY 2001 sampling location.

5.0 DATA MANAGEMENT AND DQO SCREENING

The ACO laboratories provided electronic files and hardcopy printouts of the analytical results and field measurements for the groundwater and surface water samples collected during CY 2001 under management of the Y-12 GWPP. The GWPP groundwater database management subcontractor downloaded the electronic files directly into SAS® files and verified the data in accordance with the *Y-12 Plant Groundwater Protection Program Data Management Plan* (LMES 2000d). Appropriate ACO staff and the groundwater database management subcontractor worked to resolve any incomplete data transfers, irregular parameter names or reporting units, and discrepancies between electronic and hardcopy versions of the data.

Analytical results and field measurements for the WRRP groundwater and surface water samples were extracted from the project database by the GWPP groundwater database management subcontractor and formatted as SAS® files for presentation in this report. The WRRP data management process is similar to the process described above for the GWPP (BJC 1999).

The CY 2001 groundwater and surface water monitoring data presented in this report have been evaluated with respect to the DQO criteria defined in the *Y-12 Plant Groundwater Protection Program Data Management Plan* (LMES 2000d) and the functionally equivalent DQO criteria used by the WRRP (BJC 1999). Specific

DQO criteria apply to analytical results for major ions, trace metals, VOCs, radiological analytes (gross alpha, gross beta, and radionuclides), and miscellaneous laboratory analytes (e.g., total suspended solids). Only a few of the monitoring results (five charge balance errors, three duplicate sets of results, and one radiological result) obtained under the Y-12 GWPP do not meet applicable DQOs; these results are flagged with an “R” qualifier in the applicable data appendices (Appendix D and Appendix E).

6.0 GROUNDWATER ELEVATION MONITORING

As shown below in Table 5, respective networks of selected monitoring wells in the Bear Creek, East Fork, and Chestnut Ridge hydrogeologic regimes were used to monitor representative seasonal groundwater elevations during CY 2001.

Table 5. Summary of CY 2001 groundwater elevation monitoring in the Bear Creek, East Fork, and Chestnut Ridge Regimes

REGIME	DEPTH-TO-WATER MEASUREMENTS				GROUNDWATER ELEVATIONS	
	Seasonally High Flow		Seasonally Low Flow			
	Number of Wells	Dates	Number of Wells	Dates	Data	Contour Map
Bear Creek	65	April 2-3, 2001	70	September 13-26, 2001	Table B.6	Figure A.7
East Fork	67	April 2-9, 2001	67	September 19-26, 2001	Table B.7	Figure A.8
Chestnut Ridge	85	April 2-6, 2001	84	September 13-25, 2001	Table B.8	Figure A.9

Field personnel with the Y-12 GWPP measured the depth to the static water surface in each well during seasonally high flow conditions (April 2001) and field personnel subcontracted by the WRRP measured the depth to the static water surface in each well during seasonally low flow conditions (September 2001). These depth-to-water measurements were performed in accordance with the respective operating procedures for the Y-12 GWPP (LMES 1999b) and the WRRP (MDM Services Corporation 2000).

7.0 REFERENCES

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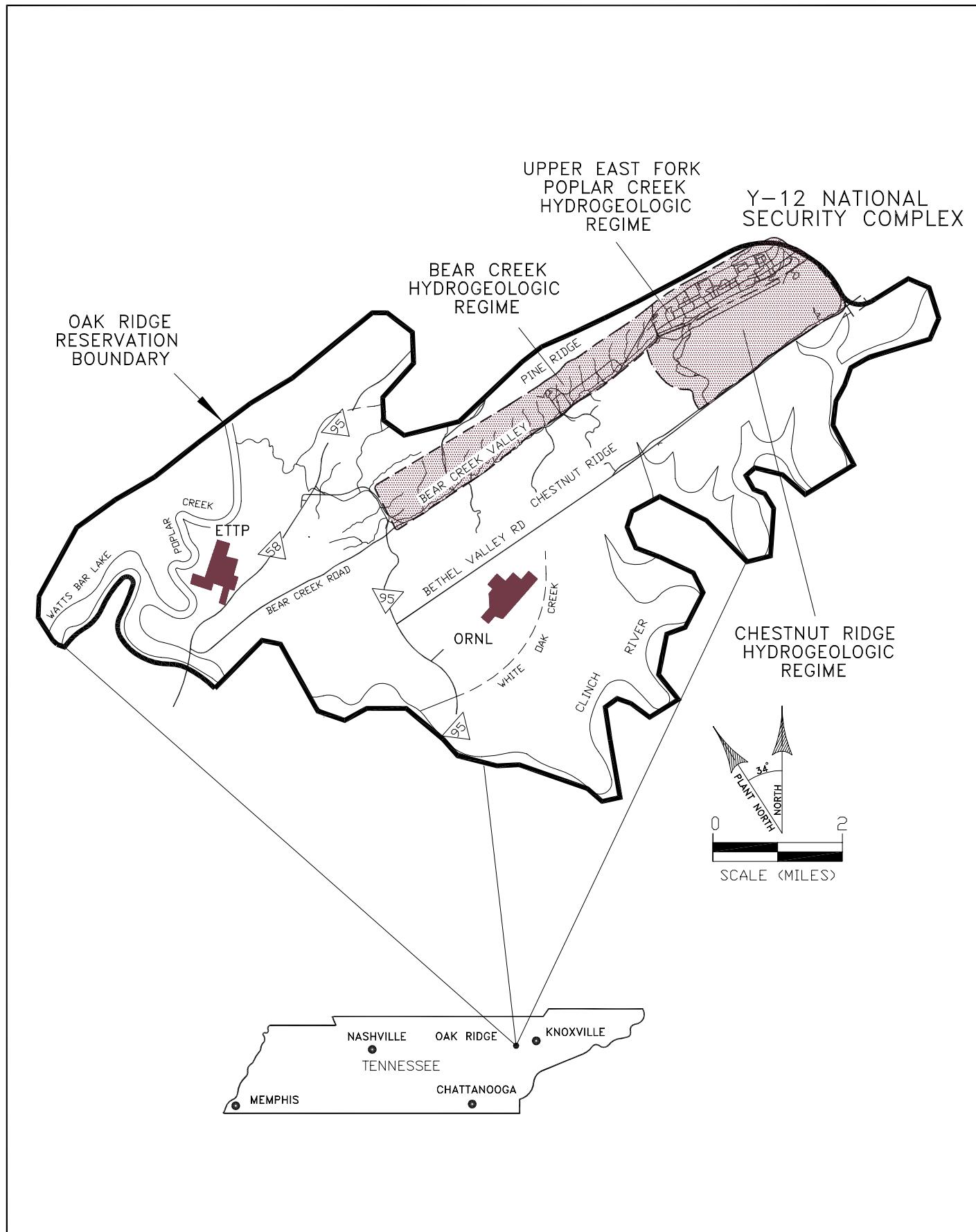
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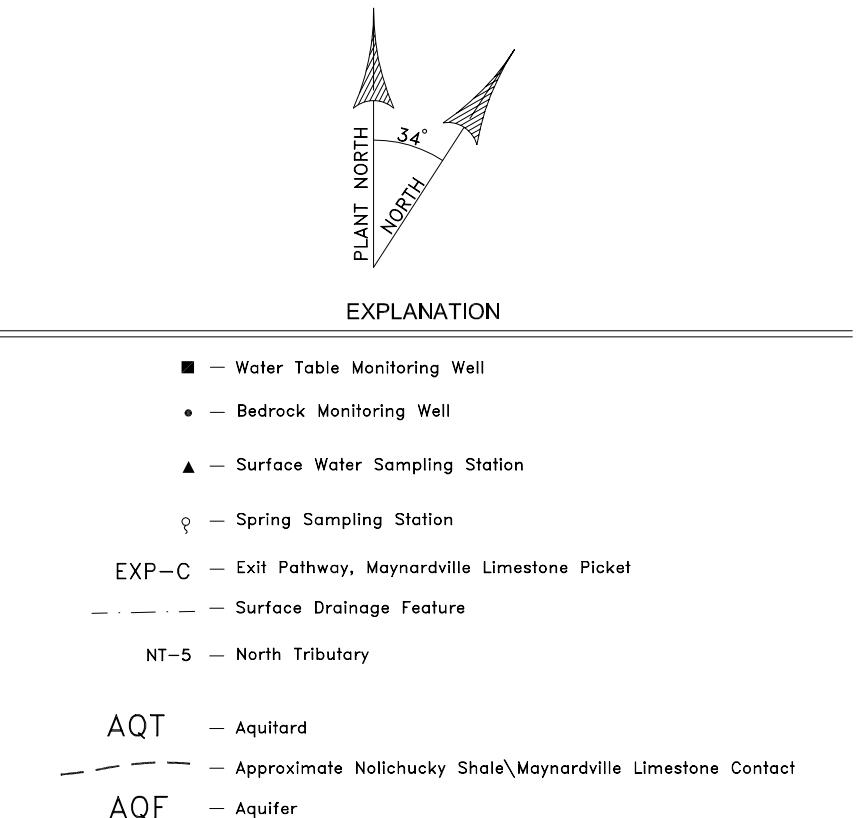
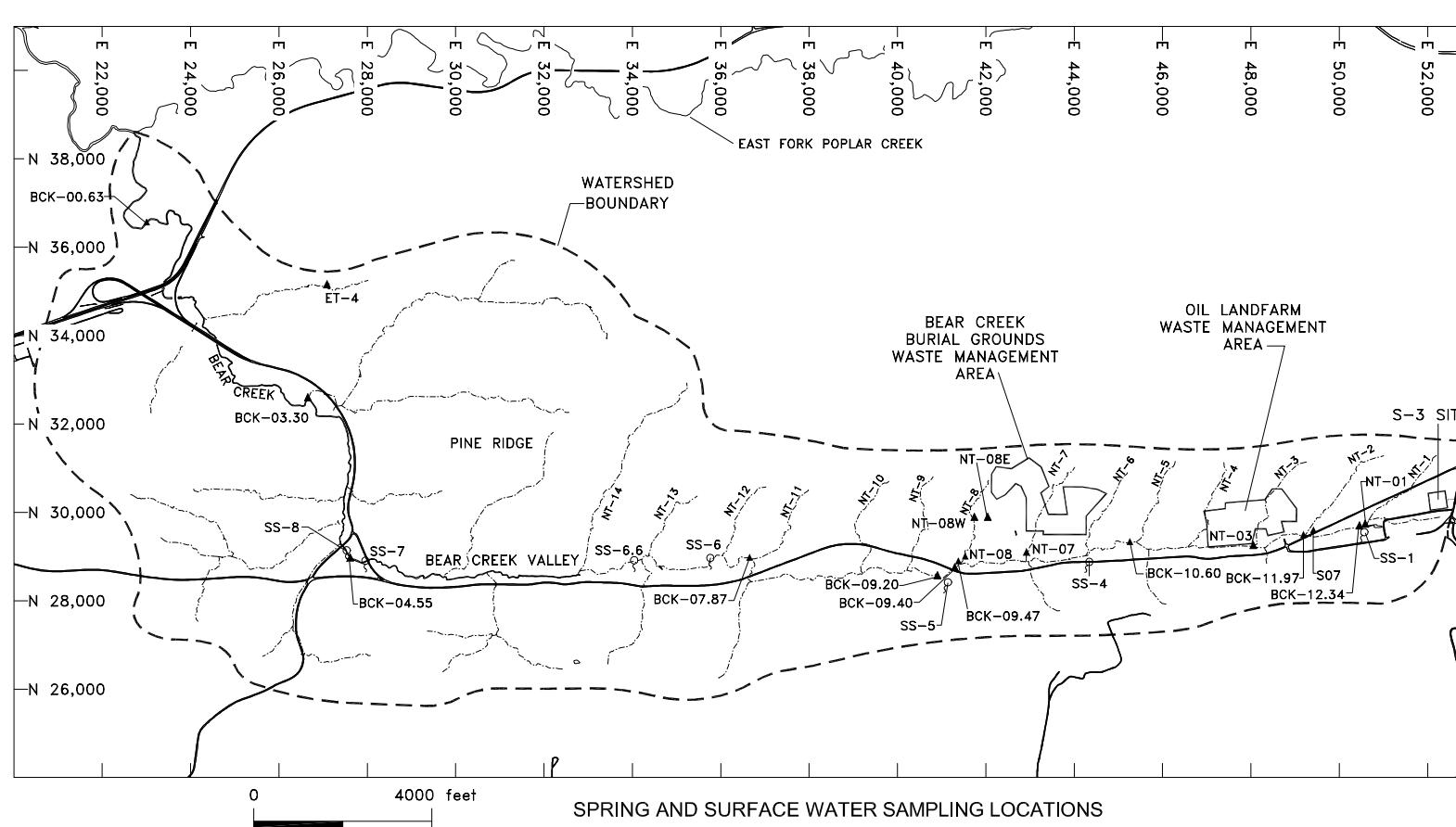
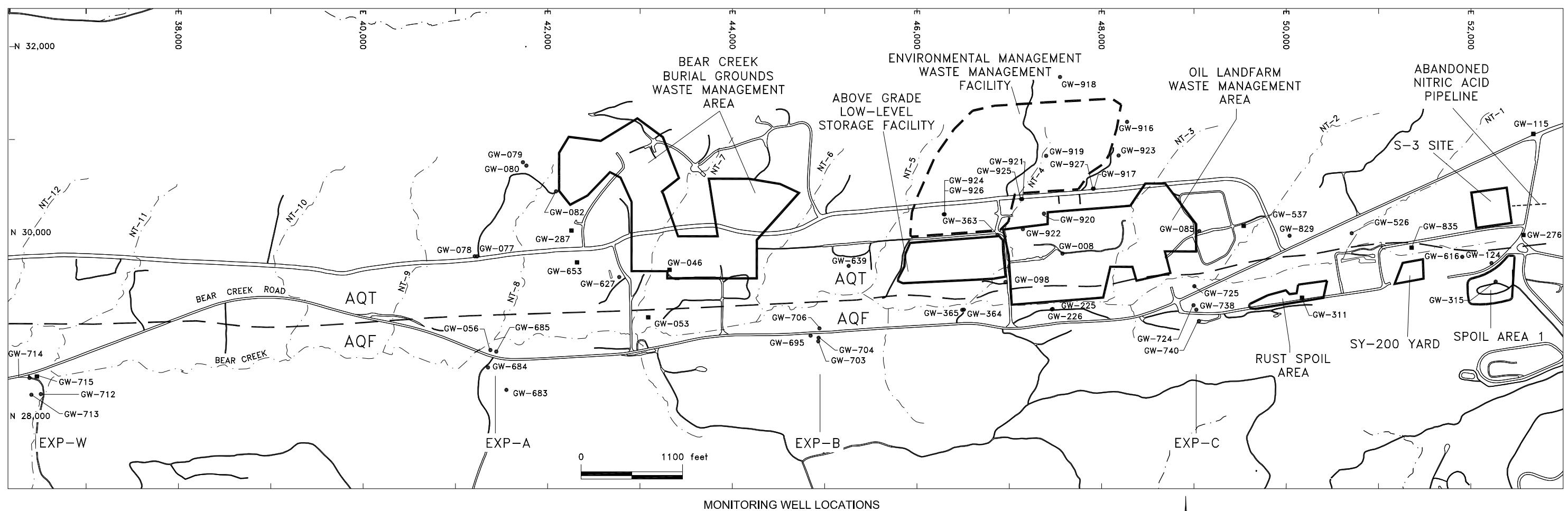
APPENDIX A

FIGURES



GWMR01_01.DWG 03/01/2002

Fig. A.1. Hydrogeologic regimes at the Y-12 National Security Complex.



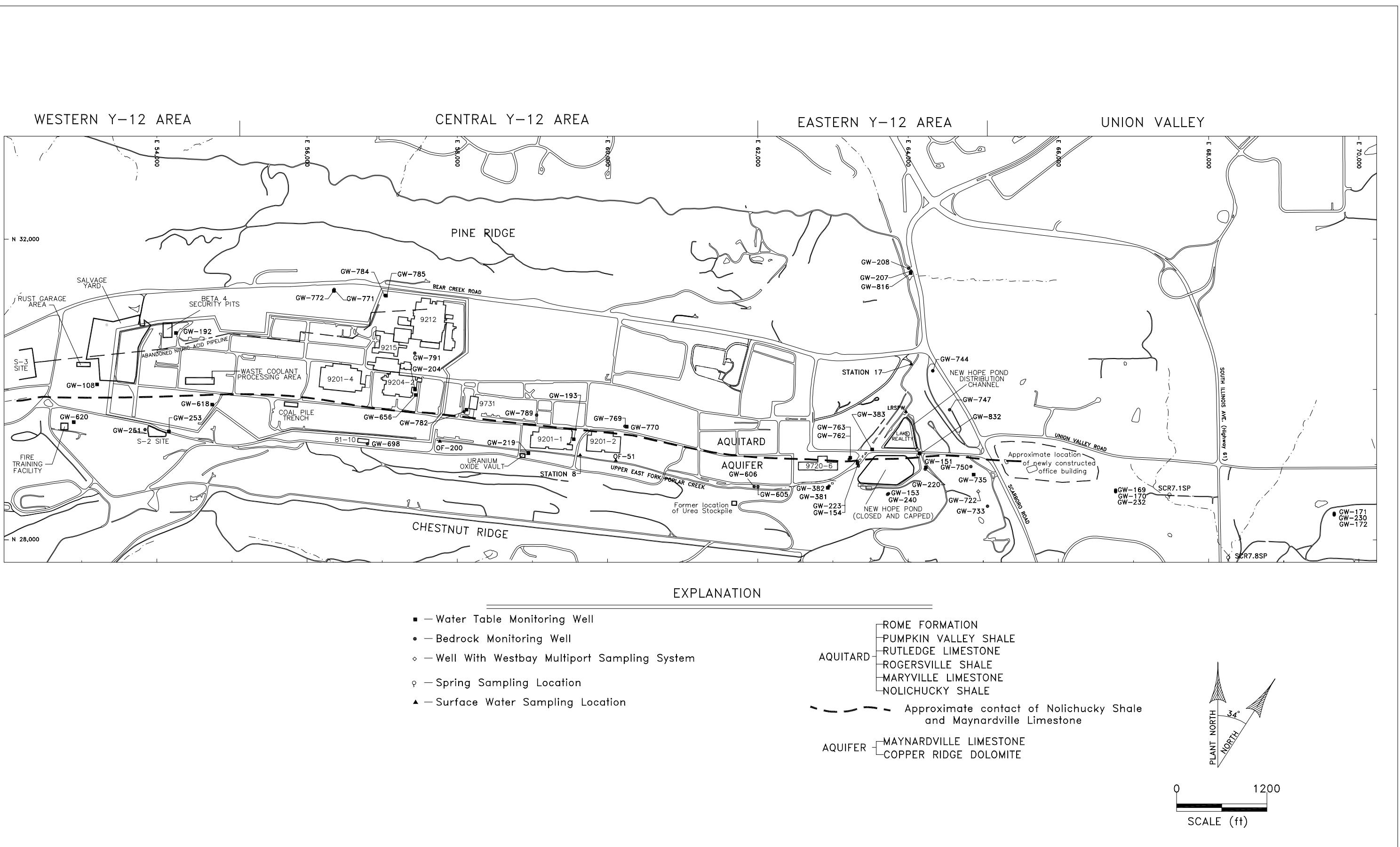
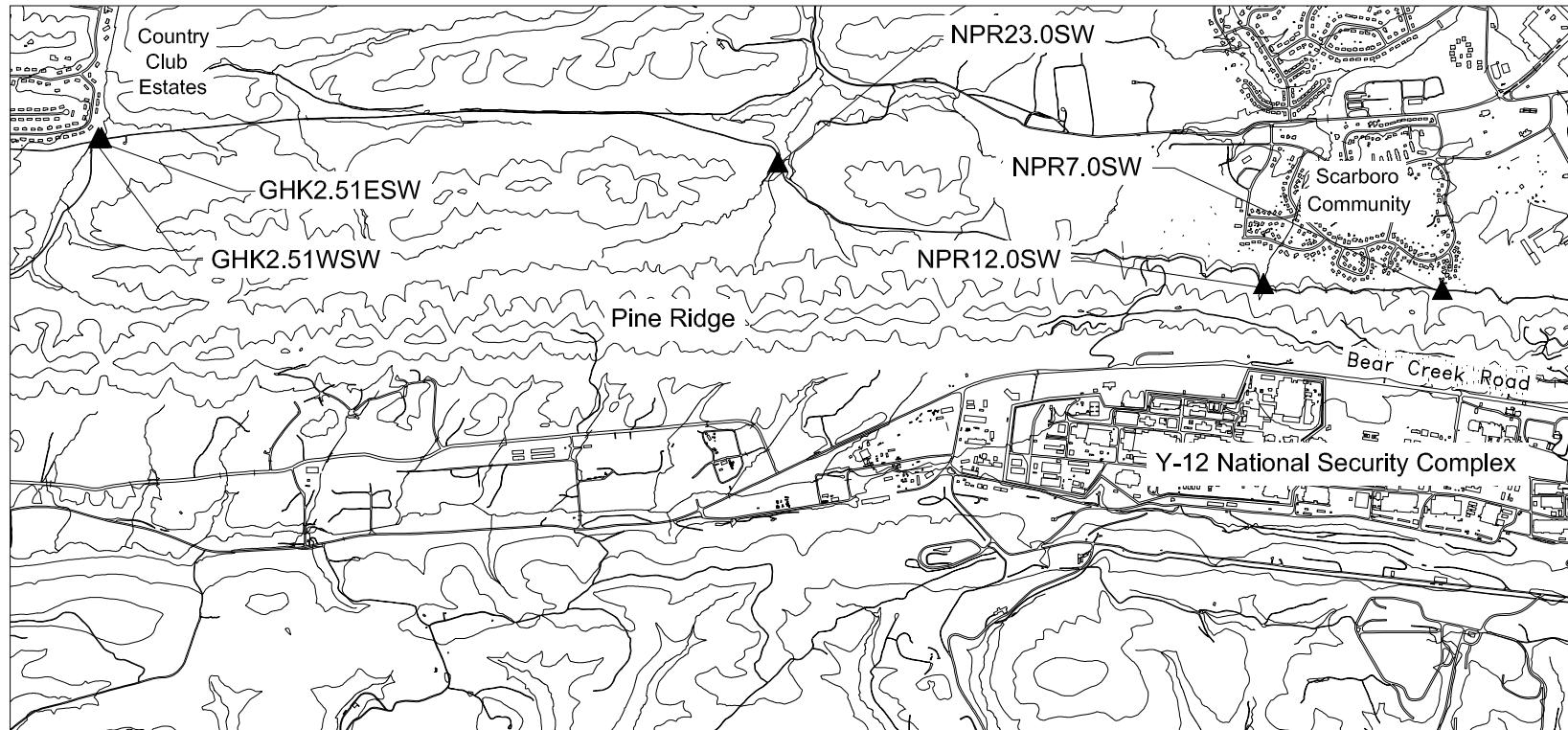


Fig. A.3. CY 2001 sampling locations in the Upper East Fork Poplar Creek Hydrogeologic Regime and in Union Valley.

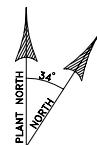
Fig. A.4. CY 2001 surface water sampling locations north of Pine Ridge.

A-4

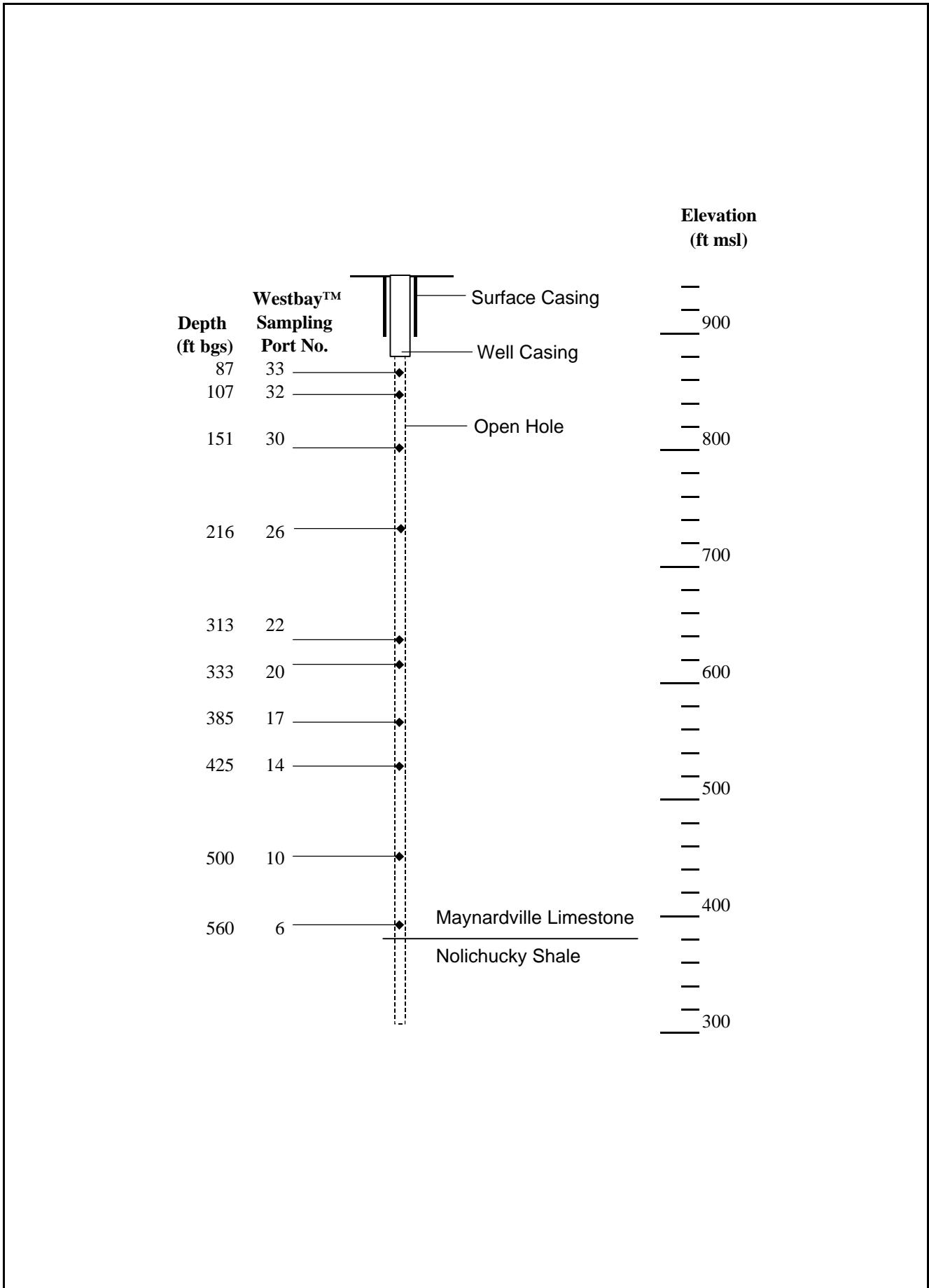


EXPLANATION

▲ Surface Water Sampling Location



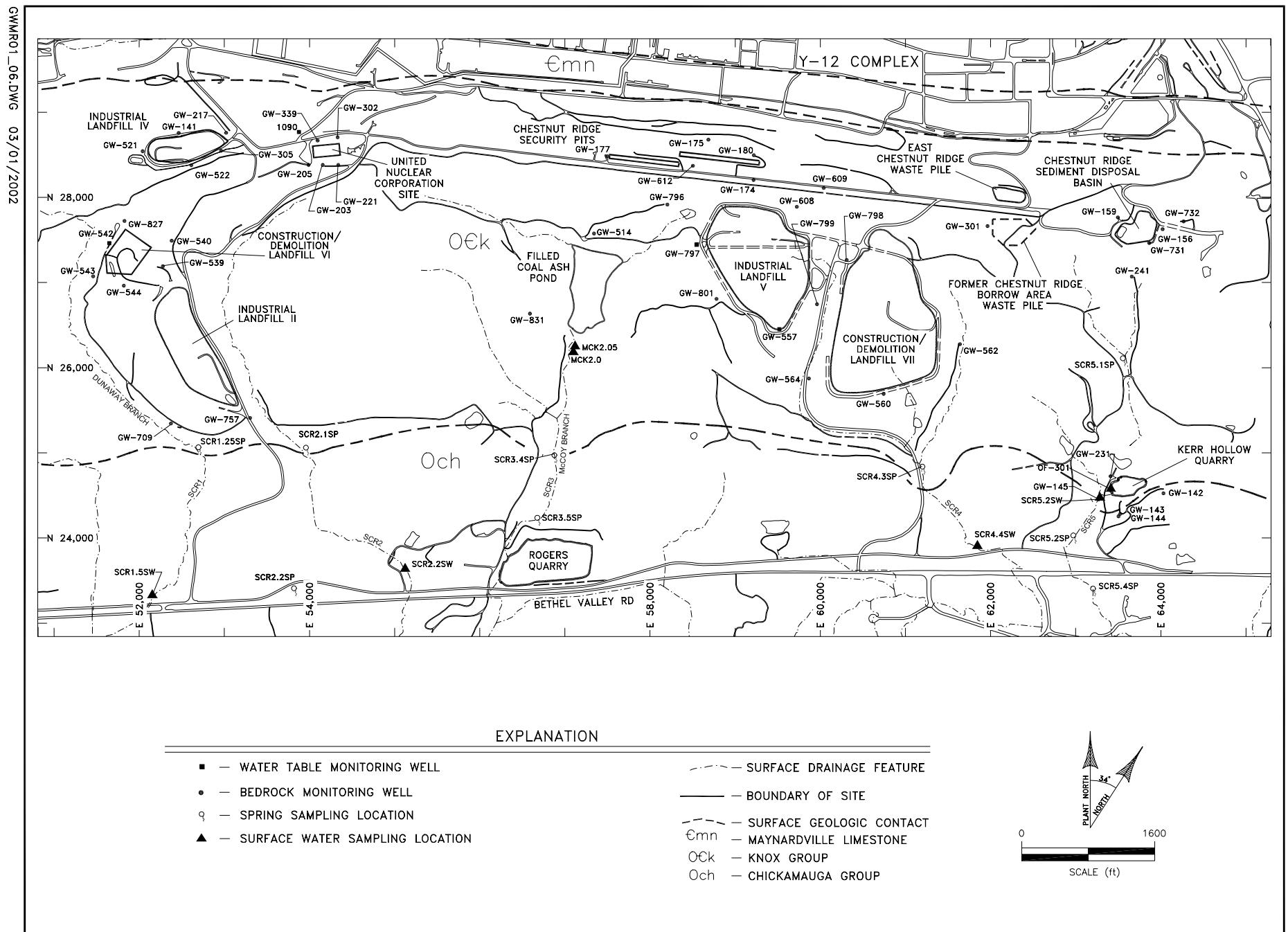
0 2500
SCALE (ft)

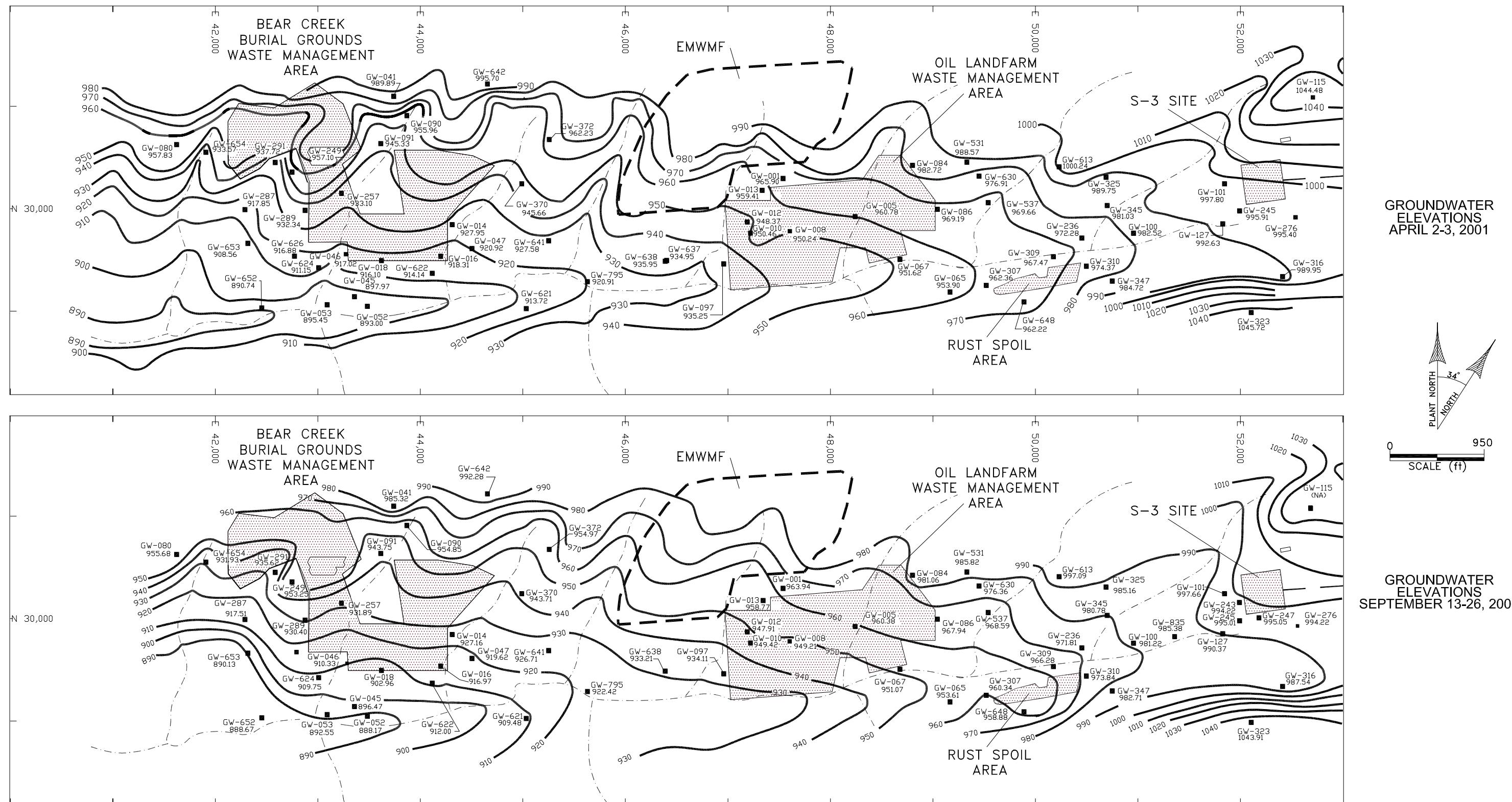


GWMR01 Fig5.xls

Fig. A.5. Westbay™ monitoring system sampling port depths in well GW-722.

Fig. A.6. CY 2001 sampling locations in the Chestnut Ridge Hydrogeologic Regime.



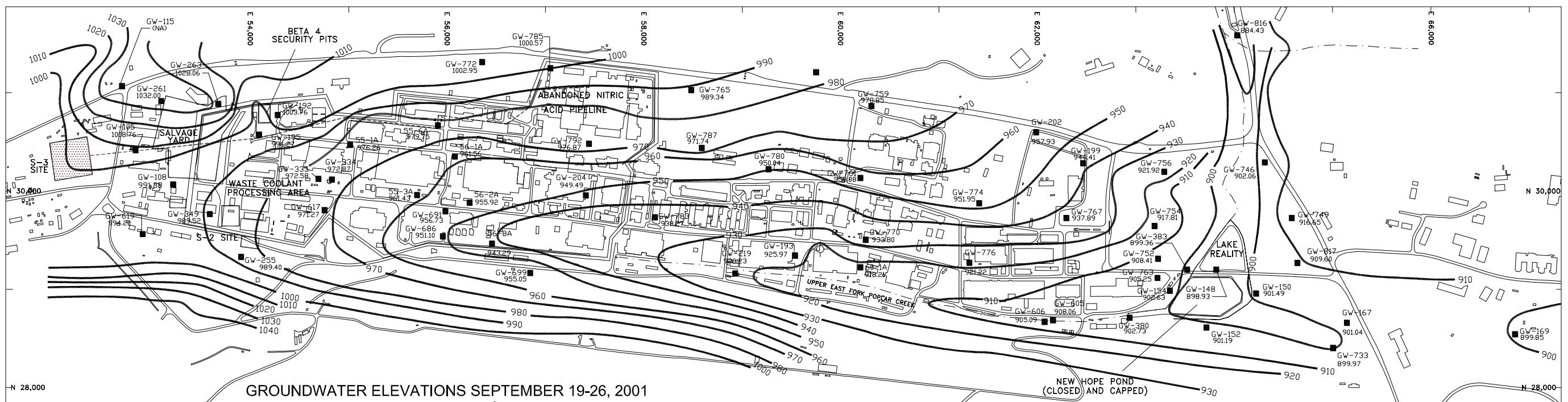
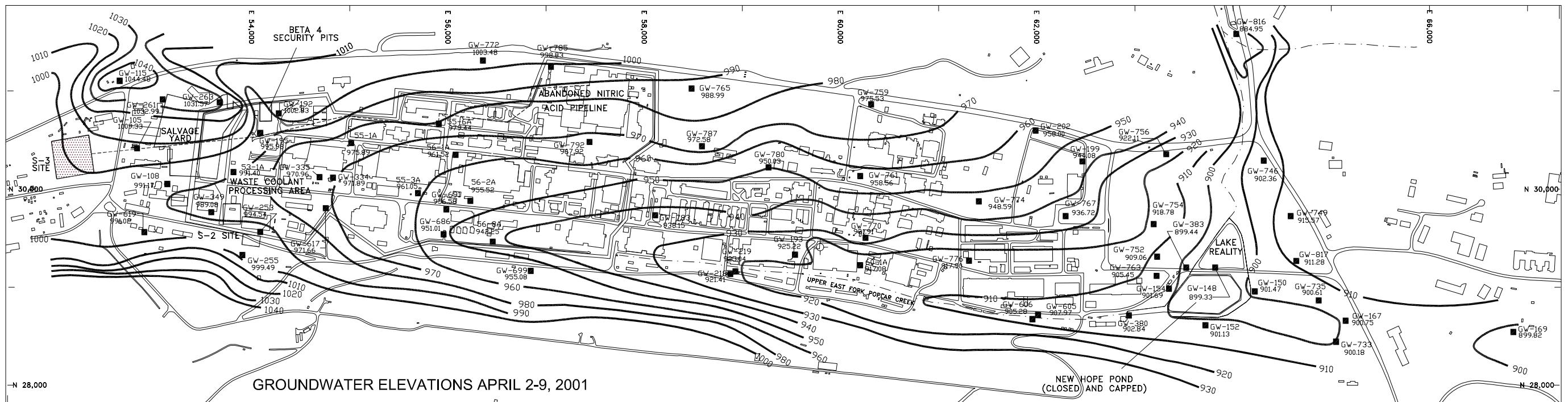


EXPLANATION

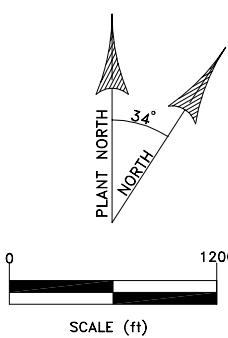
- WATER TABLE INTERVAL MONITORING WELL
(NA) Spurious depth-to-water measurement (see Appendix B, Table 6)

— 920 — WATER-LEVEL ISOPLETH (ft ms)
- - - - SURFACE DRAINAGE FEATURE

Fig. A.7. Seasonal groundwater elevations in the Bear Creek Hydrogeologic Regime, 200

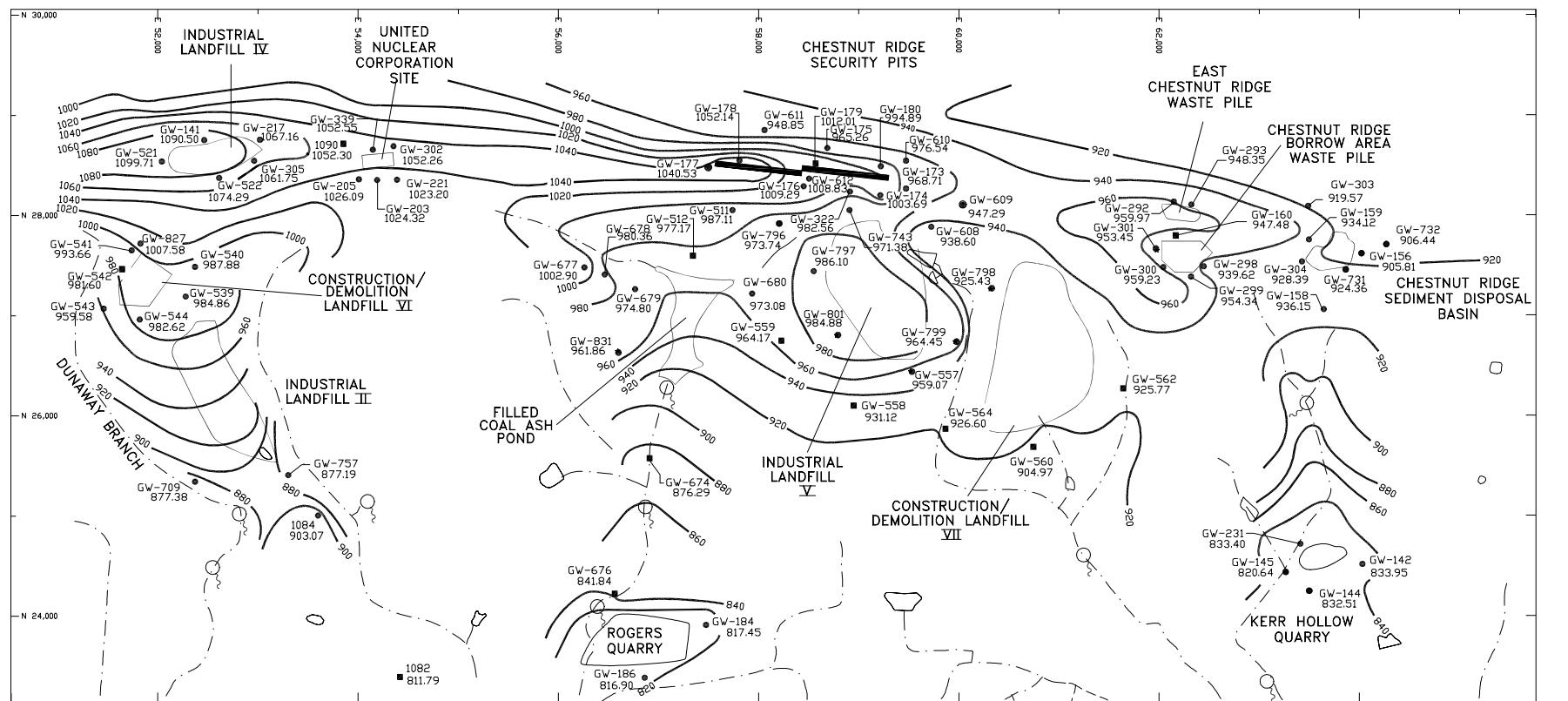


EXPLANATION

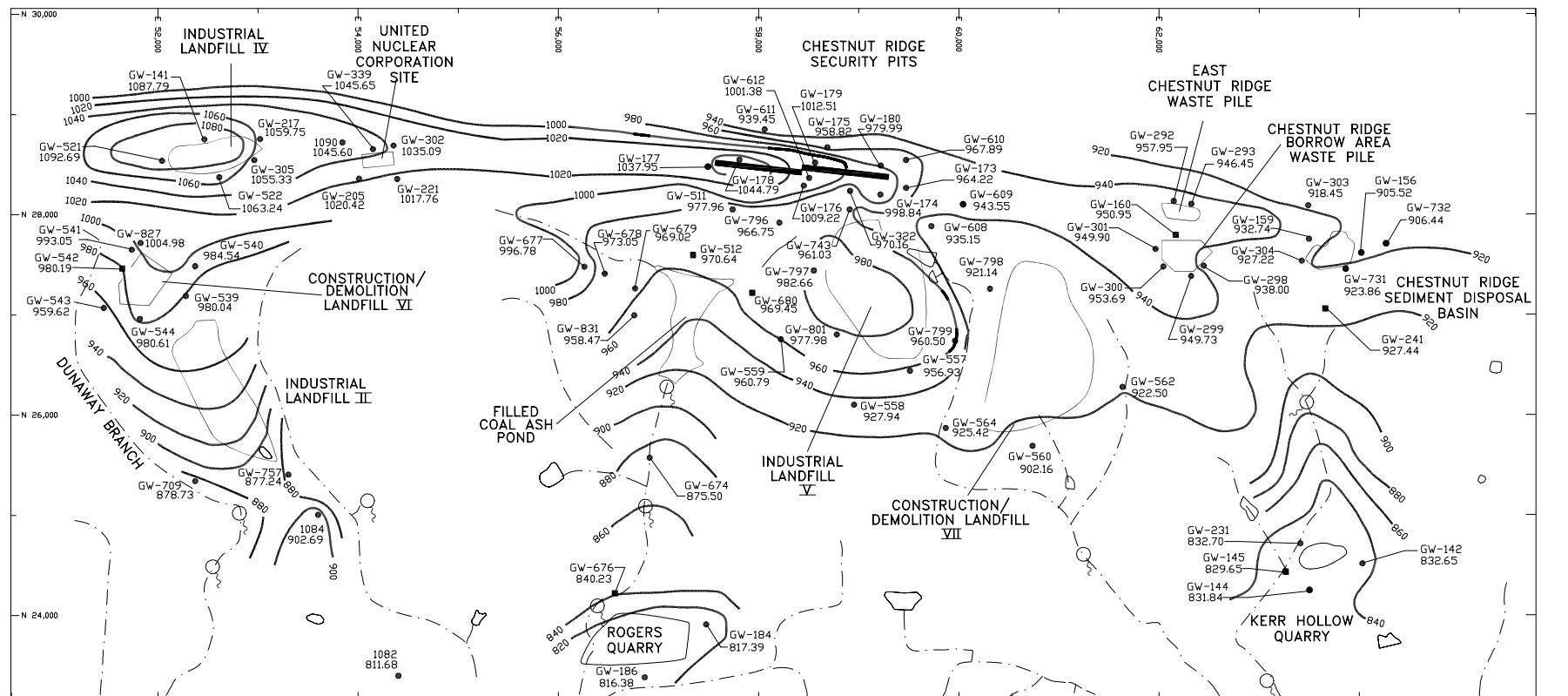


- — WATER TABLE INTERVAL MONITORING WELL
- (NA) — Spurious depth-to-water measurement (see Appendix B, Table 5)
- — BUILDING 9201-2 SUMP

- APPROXIMATE WATER-LEVEL ISOPLETH (ft msl)
- - - SURFACE DRAINAGE FEATURE



GROUNDWATER ELEVATIONS APRIL 2-6, 2001



GROUNDWATER ELEVATIONS SEPTEMBER 13-25, 2001

EXPLANATION

- WATER TABLE INTERVAL MONITORING WELL
 - BEDROCK INTERVAL MONITORING WELL

The diagram includes three geological symbols: a wavy line labeled "920" representing a water-level isopleth; a dashed line representing a surface drainage feature; and a magnifying glass icon representing a spring.

GWMR01_09.DWG 02/22/2002

Fig. A.9. Seasonal groundwater elevations in the Chestnut Ridge Hydrogeologic Regime, 2001.

APPENDIX B

TABLES

Table B.1. Summary of CY 2001 sampling and analysis plan addenda

Addendum No.	Effective Date	Modification to the CY 2001 Sampling and Analysis Plan ¹
2001-01	02/15/01	Removed well GW-568 (sample group CR-2) from CY 2001 monitoring schedules.
2001-02	02/15/01	Removed all rinsate samples from sample groups BC-4 and CR-2.
2001-03	01/01/01	Changed SAP references to the <i>Quality Assurance Plan (QAP) for the Analytical Chemistry Organization</i> (May 2001; YP65-9006, Rev. H).
2001-04	03/05/01	Added process basin 9215-STACK 11 to first quarter monitoring schedule as part of the Y-12 GWPP Sump Study.
2001-05	03/08/01	Included weight percent results for uranium-234, -236, and -238 in parameter group RAD(13).
2001-06	04/01/01	Added RAD(13) to the samples collected during the second and fourth quarters from wells GW-782 in sample group EF-1, and GW-204 and GW-656 in sample group EF-4.
2001-07	03/14/01	Added wells GW-056 and GW-685 to sample group BC-1 for the first quarter only; intended to verify the spuriously high mercury concentrations in CY 2000 samples.
2001-08	04/26/01	Replaced surface water station NPR10.0SW with NPR23.0SW in sample group PR-1.
2001-09	07/01/01	Dropped well GW-177 (sample group CR-3) from the third quarter monitoring schedule.
2001-10	07/01/01	Dropped well GW-569 (sample group CR-2) from the first and third quarter monitoring schedules.
2001-11	04/23/01	Added process basin 9215-STACK 11 to second quarter monitoring schedule as part of the Y-12 GWPP Sump Study and a Stack 11 Water Investigation.
2001-12	05/25/01	Documented triweekly sampling of process basin 9215-STACK11 under the Stack 11 water investigation.
2001-13	09/05/01	Added wells GW-204 and GW-782 to the third quarter monitoring schedule to support the Stack 11 Water Investigation.
2001-14	09/05/01	Modified the analytes specified for wells GW-204 and GW-782 in Addendum 2001-13.
2001-15	02/19/01	Replaced surface water station SCR5.2SP with SCR5.2SW on the first quarter monitoring schedule. The first quarter sample was collected from a surface water location upstream from spring SCR5.2SP.

Note:

- 1 Modification to the *Y-12 Plant Groundwater Protection Program Groundwater and Surface Water Sampling and Analysis Plan for Calendar Year 2001* (Lockheed Martin Energy Systems, Inc. 2000a).

**Table B.2. CY 2001 groundwater and surface water sampling dates
in the Bear Creek Hydrogeologic Regime**

WRRP ¹		CERCLA ROD (!) and Baseline (") Monitoring					
		RCRA Post-Closure Corrective Action Monitoring					
GWPP ²		DOE Order 5400.1 Exit Pathway/Perimeter Monitoring					
		DOE Order 5400.1 Surveillance Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵					
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
BCK-00.63	EXP-SW	01/11/01	.	07/11/01	.	!	
BCK-03.30	EXP-SW	03/22/01	.	09/18/01	.		!
BCK-04.55	EXP-SW	01/11/01	.	07/12/01 D	.	!	
BCK-07.87	EXP-SW	01/11/01	.	07/11/01	.	!	!
BCK-09.20	EXP-SW	03/21/01	.	09/17/01	.		!
BCK-09.40	EXP-SW	01/10/01	.	07/11/01	.	!	
BCK-09.47	EXP-SW	03/21/01	.	09/17/01	.		!
BCK-11.54	EXP-SW	.	.	09/17/01	.		!
BCK-11.84	EXP-SW	.	.	09/17/01	.		!
BCK-11.97	EXP-SW	01/10/01	.	07/12/01	.	!	
BCK-12.34	EXP-SW	03/21/01	.	09/17/01	.		!
ET-4	WWSY	01/18/01 02/13/01	.	.	.		"
GW-008	OLF	01/03/01	.	07/09/01	.	!	
GW-046	BG	01/04/01	.	07/09/01	.	!	
GW-053	BG	02/12/01	.	07/25/01	.	!	
GW-056	EXP-A	03/14/01	.	.	.	!	
GW-077	BG	01/31/01	.	08/01/01	.		!
GW-078	BG	01/31/01	.	08/01/01	.		!
GW-079	BG	01/31/01	.	08/02/01	.		!
GW-080	BG	01/31/01 D	.	08/06/01 D	.		!
GW-082	BG	02/13/01	.	07/26/01	.	!	
GW-085	OLF	02/05/01 D	.	08/01/01	.	!	
GW-098	OLF	03/13/01	.	08/08/01	.	!	
GW-115	S3	01/04/01	.	07/09/01	.		!
GW-124	S3	03/19/01	.	08/09/01	.	!	
GW-225	OLF	03/19/01	.	08/08/01 D	.	!	
GW-226	OLF	02/06/01	.	08/02/01 D	.	!	
GW-276	S3	01/04/01	.	07/10/01	.		!
GW-311	RS	02/05/01	.	07/31/01	.	!	
GW-315	SPI	01/29/01	.	07/31/01	.	!	
GW-363	EMWMF	04/04/01*	06/04/01	08/28/01	11/29/01		"
GW-364	OLF	03/13/01	.	08/07/01	.	!	
GW-365	OLF	03/27/01 D	.	08/07/01	.	!	
GW-526	S3	02/01/01	.	08/06/01	.		!

Table B.2 (continued)

WRRP ¹		CERCLA ROD (!) and Baseline ("") Monitoring					
		RCRA Post-Closure Corrective Action Monitoring					
GWPP ²		DOE Order 5400.1 Exit Pathway/Perimeter Monitoring					
		DOE Order 5400.1 Surveillance Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵					
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
GW-537	OLF	02/06/01	.	08/02/01	.	!	
GW-616	S3	03/27/01	.	08/09/01	.	!	
GW-627	BG	02/13/01	.	07/26/01	.	!	
GW-639	EMWMF	04/05/01*	06/13/01	08/28/01	11/26/01		"
GW-653	BG	02/12/01	.	07/25/01	.	!	
GW-683	EXP-A	01/09/01	.	07/10/01	.	!	
GW-684	EXP-A	01/09/01	.	07/10/01	.	!	
GW-685	EXP-A	03/14/01	.	.	.	!	
GW-695	EXP-B	01/16/01	.	07/16/01	.	!	
GW-703	EXP-B	01/22/01	.	07/16/01	.	!	
GW-704	EXP-B	01/23/01	.	07/17/01	.	!	!
GW-706	EXP-B	01/23/01 D	.	07/17/01	.	!	!
GW-712	EXP-W	01/02/01	.	07/02/01	.	!	!
GW-713	EXP-W	01/03/01	.	07/10/01	.	!	!
GW-714	EXP-W	01/02/01	.	07/02/01	.	!	!
GW-715	EXP-W	01/02/01 D	.	07/09/01 D	.	!	!
GW-724	EXP-C	01/25/01	.	07/19/01	.	!	
GW-725	EXP-C	01/22/01	.	07/19/01	.	!	
GW-738	EXP-C	01/24/01	.	07/18/01	.	!	
GW-740	EXP-C	01/24/01	.	07/18/01 D	.	!	
GW-829	OLF	01/29/01	.	08/01/01	.	!	
GW-835	S3	02/06/01	05/16/01	08/09/01	11/14/01		!
GW-916	EMWMF	04/02/01 D*	05/30/01 D	08/22/01 D	12/03/01 D		"
GW-917	EMWMF	04/03/01*	06/04/01	08/23/01	12/05/01		"
GW-918	EMWMF	04/02/01*	05/30/01	08/23/01	12/03/01		"
GW-919	EMWMF	.	.	.	12/04/01		"
GW-920	EMWMF	04/04/01*	06/11/01	08/23/01	12/04/01		"
GW-921	EMWMF	04/03/01*	05/31/01	08/27/01	11/27/01		"
GW-922	EMWMF	04/04/01*	06/11/01	08/23/01	12/04/01		"
GW-923	EMWMF	04/02/01*	06/06/01	08/27/01	12/03/01		"
GW-924	EMWMF	.	06/05/01	08/28/01	12/05/01		"
GW-925	EMWMF	04/03/01*	05/31/01	08/27/01	11/28/01**		"
GW-926	EMWMF	04/02/01*	06/05/01	08/27/01	11/29/01		"
GW-927	EMWMF	04/03/01*	05/30/01	08/22/01	12/05/01		"

Table B.2 (continued)

WRRP ¹		CERCLA ROD (!) and Baseline ("") Monitoring					
		RCRA Post-Closure Corrective Action Monitoring					
GWPP ²		DOE Order 5400.1 Exit Pathway/Perimeter Monitoring					
		DOE Order 5400.1 Surveillance Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵				!	"
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
NT-01	EXP-SW	01/10/01	.	07/12/01	.	!	
NT-03	EXP-SW	03/21/01	.	.	.		!
NT-07	EXP-SW	03/22/01	.	09/18/01	.		"
NT-08	EXP-SW	03/22/01	.	09/18/01	.		"
NT-8E	EXP-SW	03/22/01	.	09/18/01	.		"
NT-8W	EXP-SW	03/22/01	.	09/18/01	.		"
SO7 (NT-2)	EXP-SW	.	.	09/17/01	.		"
SS-1	EXP-SW	01/10/01	.	07/12/01	.	!	
SS-4	EXP-SW	01/11/01 D	.	07/11/01	.	!	!
SS-5	EXP-SW	01/11/01	.	07/11/01	.	!	!
SS-6	EXP-SW	01/11/01	.	07/11/01	.		!
SS-6.6	EXP-SW	03/22/01 D	.	.	.		!
SS-7	EXP-SW	03/22/01	.	09/18/01	.		!
SS-8	EXP-SW	03/22/01	.	09/18/01	.		!

Notes:

1 Groundwater and surface water monitoring performed for the Water Resources Restoration Program, managed by Bechtel Jacobs Company LLC.

2 Groundwater and surface water monitoring performed for the Y-12 Groundwater Protection Program managed by BWXT Y-12, L.L.C.

- 3 BCK - Bear Creek Kilometer
 ET - Eastern Tributary (to Bear Creek)
 GW - Groundwater Monitoring Well
 NT - Northern Tributary (to Bear Creek)
 S07 - Surface water location in NT-2
 SS - Spring sampling location (south side of Bear Creek)

Table B.2 (continued)

Notes: (continued)

- 4 BG - Bear Creek Burial Grounds Waste Management Area
EMWMF - Environmental Management Waste Management Facility
EXP-A - Exit Pathway (Maynardville Limestone) Picket A
EXP-B - Exit Pathway Picket B
EXP-C - Exit Pathway Picket C
EXP-W - Exit Pathway Picket W
EXP-SW - Exit Pathway (Bear Creek) Surface Water
OLF - Oil Landfarm Waste Management Area
RS - Rust Spoil Area
SPI - Spoil Area I
S3 - S-3 Site
WWSY - White Wing Scrap Yard
- 5 Note that surface water station BCK-10.60 was dry during both sampling events and no samples were collected from this location during CY 2001.
- - Not sampled
D - Duplicate sample collected on specified date (shown in bold typeface)
* - Samples collected from wells at the EMWMF in April were intended for first quarter samples
** - Well GW-925 was re-sampled on 11/29/01 for radiochemical analytes

**Table B.3. CY 2001 groundwater and surface water sampling dates in the
Upper East Fork Poplar Creek Hydrogeologic Regime**

WRRP ¹		CERCLA ROD (!) and Baseline ("") Monitoring					
		RCRA Post-Closure Corrective Action Monitoring					
GWPP ²		DOE Order 5400.1 Exit Pathway/Perimeter Monitoring					
		DOE Order 5400.1 Surveillance Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵					
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
GHK2.51ESW	EXP-NPR	.	05/23/01	.	.		!
GHK2.51WSW	EXP-NPR	.	05/09/01	.	11/27/01	!	
GW-108	S3	01/04/01	.	07/11/01	.		!
GW-151	NHP	01/11/01	.	07/30/01	.		!
GW-153	NHP	.	04/26/01	.	10/23/01	!	
GW-154	NHP	01/11/01	.	07/30/01	.		!
GW-169	EXP-UV	DRY	05/01/01	07/31/01	DRY		!
GW-170	EXP-UV	01/10/01 D	05/01/01 D	07/31/01 D	11/07/01 D		!
GW-171	EXP-UV	01/29/01	.	08/01/01	.		!
GW-172	EXP-UV	01/29/01	.	08/01/01	.		!
GW-192	B4	.	04/24/01	.	10/17/01	!	
GW-193	T2331	01/08/01	.	07/12/01	.		!
GW-204	T0134	.	05/23/01	09/05/01	11/12/01	!	
GW-207	EXP-SR	.	05/02/01	.	10/30/01	!	
GW-208	EXP-SR	.	05/02/01	.	10/30/01	!	
GW-219	UOV	.	05/24/01	.	11/06/01 D	!	
GW-220	NHP	.	04/30/01	.	10/23/01	!	
GW-223	NHP	01/11/01	.	07/31/01	.		!
GW-230	EXP-UV	01/29/01	.	08/01/01	.		!
GW-232	EXP-UV	01/10/01	05/01/01	07/31/01	11/07/01		!
GW-240	NHP	.	04/26/01	.	10/22/01	!	
GW-251	S2	.	04/24/01	.	10/18/01	!	
GW-253	S2	.	05/02/01	.	10/29/01		!"
GW-381	NHP	.	05/01/01	.	10/24/01	!	
GW-382	NHP	01/22/01	.	07/31/01	.		!
GW-383	NHP	.	04/30/01	.	10/24/01 D	!	
GW-605	EXP-I	01/05/01 D	.	07/10/01 D	.		!
GW-606	EXP-I	01/08/01	.	07/10/01	.		!
GW-618	EXP-E	.	05/02/01	.	10/29/01		!"
GW-620	FTF	.	04/25/01	.	10/18/01	!	
GW-656	T0134	.	05/24/01	.	11/12/01	!	
GW-698	B8110	.	05/23/01	.	11/13/01	!	
GW-722-06	EXP-J	02/20/01	.	07/31/01	.	!	
GW-722-06	EXP-J	.	05/01/01	.	10/30/01		!
GW-722-10	EXP-J	02/21/01	.	08/02/01	.	!	
GW-722-10	EXP-J	.	05/03/01	.	11/05/01		!

Table B.3 (continued)

WRP ¹		CERCLA ROD (!) and Baseline ("") Monitoring					
		RCRA Post-Closure Corrective Action Monitoring					
GWPP ²		DOE Order 5400.1 Exit Pathway/Perimeter Monitoring					
		DOE Order 5400.1 Surveillance Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵				!	
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
GW-722-14	EXP-J	02/26/01 D	.	08/07/01	.	!	
GW-722-14	EXP-J	.	05/07/01	.	11/06/01	!	
GW-722-17	EXP-J	02/26/01	.	08/08/01 D	.	!	
GW-722-17	EXP-J	.	05/07/01	.	11/06/01	!	
GW-722-20	EXP-J	02/22/01	.	08/07/01	.	!	
GW-722-20	EXP-J	.	05/03/01	.	11/05/01	!	
GW-722-22	EXP-J	02/22/01	.	08/02/01	.	!	
GW-722-22	EXP-J	.	05/03/01	.	11/05/01	!	
GW-722-26	EXP-J	02/20/01	.	08/01/01	.	!	
GW-722-26	EXP-J	.	05/02/01 D	.	10/31/01 D	!	
GW-722-30	EXP-J	02/20/01	.	07/31/01	.	!	
GW-722-30	EXP-J	.	05/01/01	.	10/31/01	!	
GW-722-32	EXP-J	02/21/01	.	08/01/01	.	!	
GW-722-32	EXP-J	.	05/02/01	.	10/31/01	!	
GW-722-33	EXP-J	02/21/01	.	08/01/01	.	!	
GW-722-33	EXP-J	.	05/02/01	.	11/01/01	!	
GW-733	EXP-J	01/08/01	.	07/11/01	.	!	
GW-735	EXP-J	.	05/08/01	.	11/01/01 D	!	
GW-744	GRIDK1	.	05/07/01	.	10/31/01	!	
GW-747	GRIDK2	.	05/07/01	.	10/31/01	!	
GW-750	EXP-J	.	05/03/01	.	11/01/01	!	
GW-762	GRIDJ3	01/16/01 D	.	07/30/01 D	.		!
GW-763	GRIDJ3	.	04/25/01 D	.	10/22/01	!	
GW-769	GRIDG3	.	04/17/01	.	10/16/01	!	
GW-770	GRIDG3	.	04/17/01	.	10/15/01	!	
GW-771	GRID	.	05/22/01	.	11/05/01	!	
GW-772	GRID	.	05/22/01 D	.	11/06/01	!	
GW-782	GRIDE3	.	04/18/01 D	09/05/01	10/16/01	!	
GW-784	GRID	.	05/21/01	.	11/07/01	!	
GW-785	GRID	.	05/21/01	.	11/07/01	!	
GW-789	GRIDF3	.	04/16/01	.	10/15/01	!	
GW-791	GRIDD2	.	04/19/01	.	10/17/01 D	!	
GW-816	EXP-SR	.	05/03/01 D	.	10/31/01	!	
GW-832	NHP	01/11/01	.	07/30/01	.		!

Table B.3 (continued)

WRP ¹		CERCLA ROD (!) and Baseline ("") Monitoring					
		RCRA Post-Closure Corrective Action Monitoring					
GWPP ²		DOE Order 5400.1 Exit Pathway/Perimeter Monitoring					
		DOE Order 5400.1 Surveillance Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵					
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
LRSPW	EXP-SW	.	05/02/01	.	10/30/01	!	
NPR07.0SW	EXP-NPR	.	05/09/01 D	.	11/27/01	!	
NPR12.0SW	EXP-NPR	.	05/09/01	.	11/27/01	!	
NPR23.0SW	EXP-NPR	.	05/09/01	.	11/27/01	!	
OF 51	EXP-SW	02/27/01	.	08/28/01	.		"
OF 200	EXP-SW	02/14 & 27/01 S	.	08/28 & 09/04/01 S	.		"
SCR7.1SP	EXP-UV	01/29/01	.	08/13/01	.		!
SCR7.8SP	EXP-UV	01/29/01	.	08/13/01	.		!
STATION 17	EXP-SW	02/14 & 27/01 S	.	08/28 & 09/04/01 S	.		"
STATION 8	EXP-SW	02/14 & 27/01 S	.	08/28 & 09/04/01 S	.		"

Notes:

- 1 Monitoring activities performed by the Water Resources Restoration Program, managed by Bechtel Jacobs Company LLC.
- 2 Monitoring performed by the Y-12 Groundwater Protection Program managed by BWXT Y-12, L.L.C.
- 3
 - GHK - Gum Hollow Branch Kilometer (surface water sampling location)
 - GW - Groundwater Monitoring Well
 - LRSPW - Outfall of the New Hope Pond distribution channel (surface water sampling location)
 - NPR - North of Pine Ridge near the Scarboro Community (surface water sampling location)
 - OF - Storm drain outfall (surface water sampling location)
 - SCR - Spring sampling location in Union Valley
 - SP - Spring sampling location (suffix)
 - STATION - Surface water sampling location in Upper East Fork Poplar Creek
 - SW - Surface water sampling location (suffix)
- 4
 - B4 - Beta-4 Security Pits
 - B8110 - Building 81-10
 - EXP - Exit Pathway monitoring location:
 - ! -E, -I, or -J: Maynardville Limestone Picket monitoring well.
 - ! -NPR: Surface water station located north of Pine Ridge where drainage exits the Oak Ridge Reservation.
 - ! -SW: Onsite spring or surface water station
 - ! -SR: Along Scarboro Road in the gap through Pine Ridge
 - ! -UV: East of the Oak Ridge Reservation boundary in Union Valley

Table B.3 (continued)

Notes: (continued)

- | | | |
|-------|---|---|
| FTF | - | Fire Training Facility |
| GRID | - | Comprehensive Groundwater Monitoring Plan Grid Location |
| NHP | - | New Hope Pond |
| RG | - | Rust Garage Area |
| S2 | - | S-2 Site |
| S3 | - | S-3 Ponds Site |
| SY | - | Y-12 Salvage Yard |
| T0134 | - | Tank 0134-U |
| T2331 | - | Tank 2331-U |
| UOV | - | Uranium Oxide Vault |
- 5 . - Not sampled.
- D - Duplicate sample collected on specified date (shown in bold typeface).
- S** - Two sets of samples were collected: a stormflow sample (within six hours after a 0.5-inch or more rainfall) and a baseflow sample (about 72 hours after the stormflow sample).

**Table B.4. CY 2001 groundwater and surface water sampling dates
in the Chestnut Ridge Hydrogeologic Regime**

WRRP ¹		SWDF Detection Monitoring					
		RCRA Post-Closure Detection (!) and Corrective Action ("") Monitoring					
		CERCLA ROD (!) and Baseline ("") Monitoring					
Y-12 GWPP ²		Surveillance (!) and Exit Pathway/Perimeter ("") Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵					
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
1090	UNCS	01/30/01	.	07/26/01	.	!	
GW-141	LIV	01/23/01	.	07/17/01	.		!
GW-142	KHQ	.	04/09 - 12/01 REP	.	10/08/01		!
GW-143	KHQ	.	04/09 - 12/01 REP	.	10/08/01		!
GW-144	KHQ	.	04/09 - 12/01 REP	.	10/08/01		!
GW-145	KHQ	.	04/09 - 12/01 REP	.	10/08/01		!
GW-156	CRSDB	.	04/16 - 19/01 REP	.	10/09/01 D		!
GW-159	CRSDB	.	04/16 - 19/01 REP	.	10/09/01		!
GW-174	CRSP	03/20/01	.	08/21/01	.	!	
GW-175	CRSP	03/20/01	.	08/20/01	.	!	
GW-177	CRSP	03/26/01 D	.	.	.	!	
GW-177	CRSP	.	.	07/25/01	.	"	
GW-180	CRSP	03/21/01	.	08/21/01 D	.	!	
GW-203	UNCS	01/30/01	.	07/26/01	.	!	
GW-205	UNCS	01/30/01	.	07/26/01	.	!	
GW-217	LIV	01/22/01	.	07/17/01	.		!
GW-221	UNCS	01/30/01	.	07/26/01	.	!	
GW-231	KHQ	.	04/16 - 19/01 REP	.	10/08/01 D		!
GW-241	CRSDB	03/22/01	.	08/16/01	.	!	
GW-301	CRBAWP	01/09/01 D	.	07/11/01 D	.	"	
GW-302	UNCS	01/31/01	.	07/26/01	.	!	
GW-305	LIV	01/17/01	05/03/01	07/16/01	11/07/01		!
GW-339	UNCS	01/30/01 D	.	07/26/01 D	.	!	
GW-514	FCAP	03/28/01	.	08/16/01	.	!	
GW-521	LIV	01/17/01	.	07/16/01	.	"	!
GW-522	LIV	01/18/01	.	07/16/01	.		!
GW-539	LII	01/23/01	.	07/19/01 *	.		!
GW-540	LII/CDLVII	01/24/01	.	07/19/01 *	.		!
GW-542	CDLVI	01/23/01	.	07/24/01	.		!
GW-543	CDLVI	01/24/01	.	07/23/01	.		!
GW-544	CDLVI	01/24/01	.	07/23/01	.		!
GW-557	LV	01/17/01 D	.	07/18/01 D	.	"	!
GW-560	CDLVII	.	05/21/01	07/25/01	11/06/01		!
GW-562	CDLVII	.	05/21/01	07/24/01	11/01/01**		!
GW-564	CDLVII	.	05/21/01 D	07/24/01 D	11/01/01 D**		!
GW-608	CRSP	03/21/01	.	08/20/01	.	!	

Table B.4 (continued)

WRRP ¹		SWDF Detection Monitoring					
		RCRA Post-Closure Detection (!) and Corrective Action ("") Monitoring					
		CERCLA ROD (!) and Baseline ("") Monitoring					
Y-12 GWPP ²		Surveillance (!) and Exit Pathway/Perimeter ("") Monitoring					
Sampling Point ³	Sampling Location ⁴	CY 2001 Sampling Date ⁵					
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		
GW-609	CRSP	01/10/01	.	.	.	.	"
GW-612	CRSP	03/29/01	.	08/22/01	.	!	
GW-709	LII	01/22/01	.	07/19/01 *	.	.	!
GW-731	CRSDB	.	04/16 - 19/01 REP	.	10/09/01	.	!
GW-732	CRSDB	.	04/16 - 19/01 REP	.	10/09/01	.	!
GW-757	LII	01/22/01	.	07/23/01	.	.	!
GW-796	LV	01/18/01	.	07/18/01	.	.	!
GW-797	LV	01/16/01	.	07/23/01	.	.	!
GW-798	CDLVII	01/08/01	.	07/11/01	.	.	"
GW-798	CDLVII	.	05/21/01	07/25/01	11/05/01	.	!
GW-799	LV	01/16/01	.	07/18/01	.	.	" !
GW-801	LV	01/16/01	.	07/18/01	.	.	" !
GW-827	CDLVI	01/24/01	.	07/24/01	.	.	!
GW-831	FCAP	01/08/01	.	07/12/01	.	.	"
MCK 2.0	FCAP	02/22/01	.	08/14/01	.	.	"
MCK 2.05	FCAP	02/22/01 D	.	08/14/01 D	.	.	"
OF 301	KHQ	.	04/24/01	.	10/09/01	!	
SCR1.25SP	EXP	02/22/01	.	08/14/01	.	.	"
SCR1.5SW	EXP	02/19/01	.	08/14/01	.	.	"
SCR2.1SP	EXP	02/20/01 D	.	08/14/01	.	.	"
SCR2.2SP	EXP	02/19/01	.	08/14/01	.	.	"
SCR2.2SW	EXP	02/19/01	.	DRY	.	.	"
SCR3.4SP	EXP	02/20/01	.	DRY	.	.	"
SCR3.5SP	EXP	03/13/01	.	08/14/01	.	.	"
SCR4.3SP	LV	01/17/01	.	07/16/01	.	.	!
SCR4.4SW	EXP	02/20/01	.	08/14/01	.	.	"
SCR5.1SP	EXP	02/20/01	.	08/15/01	.	.	"
SCR5.2SP	EXP	.	.	08/14/01	.	.	"
SCR5.2SW	EXP	02/19/01	.	.	.	.	"
SCR5.4SP	EXP	02/20/01	.	08/15/01	.	.	"

Notes:

- 1 Groundwater and surface water monitoring performed under the Oak Ridge Reservation Water Resources Restoration Program (WRRP), managed by Bechtel Jacobs Company LLC.
- 2 Groundwater and surface water monitoring performed under the Y-12 Groundwater Protection Program (GWPP) managed by BWXT Y-12, L.L.C.

Table B.4 (continued)

Notes: (continued)

3	GW	-	Groundwater monitoring well (also 1090)
	MCK	-	McCoy Branch Kilometer
	OF 301	-	Outfall 301: surface water station located where water exits Kerr Hollow Quarry
	SCR	-	South Chestnut Ridge (tributary prefix)
	SP	-	Spring sampling location (suffix)
	SW	-	Surface water sampling location (suffix)
4	CDLVI	-	Construction/Demolition Landfill VI
	CDLVII	-	Construction/Demolition Landfill VII
	CRBAWP	-	Chestnut Ridge Borrow Area Waste Pile
	CRSDB	-	Chestnut Ridge Sediment Disposal Basin
	CRSP	-	Chestnut Ridge Security Pits
	EXP	-	Exit Pathway (spring sampling location)
	FCAP	-	Filled Coal Ash Pond
	KHQ	-	Kerr Hollow Quarry
	LII	-	Industrial Landfill II
	LIV	-	Industrial Landfill IV
	LV	-	Industrial Landfill V
	UNCS	-	United Nuclear Corporation Site
5	.	-	Not Sampled.
	D	-	Duplicate sample collected on specified date (shown in bold typeface).
	REP	-	Four replicate groundwater samples were collected from the well over the specified date range. BOLD typeface indicates that duplicate groundwater samples were collected from the well on the following replicate sampling dates: GW-143 (April 9), GW-144 (April 11), GW-156 (April 19), and GW-732 (April 17).
	*	-	Wells GW-539, GW-540, and GW-709 were re-sampled on August 14 for nitrate analysis.
	**	-	Wells GW-562 and GW-564 were re-sampled on November 5 for gross alpha and gross beta analysis.

**Table B.5. Field measurements and laboratory analytes for CY 2001
groundwater and surface water samples**

Field Measurements	Analytical Method ¹	Reporting Limit ²	Units ³
Depth to Water	Y50-71-015	NA	ft
Water Temperature	Y50-71-001	NA	centigrade
pH	Y50-71-001	NA	pH units
Conductivity	Y50-71-001	NA	µmho/cm
Dissolved Oxygen	Y50-71-001	NA	ppm
Oxidation-Reduction Potential	Y/P65-9156	NA	mV
Miscellaneous Laboratory Analytes			
pH	SW846-9040	NA	pH units
Conductivity	SW846-9050	NA	µmho/cm
Total Dissolved Solids	EPA-160.1	1	mg/L
Total Suspended Solids	EPA-160.2	1	mg/L
Turbidity	EPA-180.1	0.1	NTU
Anions			
Alkalinity - HCO ₃	EPA-310.1	1.0	mg/L
Alkalinity - CO ₃	EPA-310.1	1.0	mg/L
Chloride	EPA-300.0	0.2	mg/L
Fluoride	EPA-340.2	0.1	mg/L
Nitrate (as Nitrogen)	EPA-300.0	0.028	mg/L
Sulfate	EPA-300.0	0.25	mg/L
Metals/Cations			
Aluminum	SW846-6010B	0.2	mg/L
Antimony	EPA-200.8	0.0025	mg/L
Arsenic	EPA-200.8	0.005	mg/L
Barium	SW846-6010B	0.004	mg/L
Beryllium	SW846-6010B	0.001	mg/L
Boron	SW846-6010B	0.1	mg/L
Cadmium	EPA-200.8	0.0005	mg/L
Calcium	SW846-6010B	0.2	mg/L
Chromium	SW846-6010B	0.02	mg/L
Chromium	EPA-200.8	0.0025	mg/L
Cobalt	SW846-6010B	0.02	mg/L
Copper	SW846-6010B	0.02	mg/L
Iron	SW846-6010B	0.05	mg/L
Lead	EPA-200.8	0.0005	mg/L
Lithium	SW846-6010B	0.01	mg/L
Magnesium	SW846-6010B	0.2	mg/L
Manganese	SW846-6010B	0.005	mg/L
Mercury	SW846-7470	0.0002	mg/L
Molybdenum	SW846-6010B	0.05	mg/L
Nickel	SW846-6010B	0.05	mg/L
Nickel	EPA-200.8	0.005	mg/L

Table B.5 (continued)

Metals/Cations (continued)	Analytical Method¹	Reporting Limit²	Units³
Potassium	SW846-6010B	2	mg/L
Selenium	EPA-200.8	0.01	mg/L
Silver	SW846-6010B	0.02	mg/L
Sodium	SW846-6010B	0.2	mg/L
Strontium	SW846-6010B	0.005	mg/L
Thallium	EPA-200.8	0.0005	mg/L
Thorium	SW846-6010B	0.2	mg/L
Uranium	EPA-200.8	0.0005	mg/L
Vanadium	SW846-6010B	0.02	mg/L
Zinc	SW846-6010B	0.05	mg/L
Volatile Organic Compounds		CRQL⁴	
Acetone	SW846-8260B UP	10	µg/L
Acrolein	SW846-8260B UP	10	µg/L
Acrylonitrile	SW846-8260B UP	5	µg/L
Benzene	SW846-8260B UP	5	µg/L
Bromochloromethane	SW846-8260B UP	5	µg/L
Bromodichloromethane	SW846-8260B UP	5	µg/L
Bromoform	SW846-8260B UP	5	µg/L
Bromomethane	SW846-8260B UP	5	µg/L
2-Butanone	SW846-8260B UP	5	µg/L
Carbon disulfide	SW846-8260B UP	5	µg/L
Carbon tetrachloride	SW846-8260B UP	5	µg/L
Chlorobenzene	SW846-8260B UP	5	µg/L
Chloroethane	SW846-8260B UP	5	µg/L
2-Chloroethyl vinyl ether	SW846-8260B UP	10	µg/L
Chloroform	SW846-8260B UP	5	µg/L
Chloromethane	SW846-8260B UP	5	µg/L
Dibromochloromethane	SW846-8260B UP	5	µg/L
1,2-Dibromo-3-chloropropane	SW846-8260B UP	10	µg/L
1,2-Dibromoethane	SW846-8260B UP	5	µg/L
Dibromomethane	SW846-8260B UP	5	µg/L
1,2-Dichlorobenzene	SW846-8260B UP	5	µg/L
1,4-Dichlorobenzene	SW846-8260B UP	5	µg/L
1,4-Dichloro-2-butene	SW846-8260B UP	5	µg/L
trans-1,4-Dichloro-2-butene	SW846-8260B UP	5	µg/L
Dichlorodifluoromethane	SW846-8260B UP	5	µg/L
1,1-Dichloroethane	SW846-8260B UP	5	µg/L
1,2-Dichloroethane	SW846-8260B UP	5	µg/L
1,1-Dichloroethene	SW846-8260B UP	5	µg/L
cis-1,2-Dichloroethene	SW846-8260B UP	5	µg/L
trans-1,2-Dichloroethene	SW846-8260B UP	5	µg/L
1,2-Dichloropropane	SW846-8260B UP	5	µg/L

Table B.5 (continued)

Volatile Organic Compounds (cont'd)	Analytical Method¹	CRQL⁵	Units³
cis-1,3-Dichloropropene	SW846-8260B UP	5	µg/L
trans-1,3-Dichloropropene	SW846-8260B UP	5	µg/L
Dimethylbenzene	SW846-8260B UP	5	µg/L
Ethanol	SW846-8260B UP	200	µg/L
Ethylbenzene	SW846-8260B UP	5	µg/L
Ethyl methacrylate	SW846-8260B UP	5	µg/L
2-Hexanone	SW846-8260B UP	5	µg/L
Iodomethane	SW846-8260B UP	5	µg/L
4-Methyl-2-pentanone	SW846-8260B UP	5	µg/L
Methylene chloride	SW846-8260B UP	5	µg/L
Styrene	SW846-8260B UP	5	µg/L
1,1,1,2-Tetrachloroethane	SW846-8260B UP	5	µg/L
1,1,2,2-Tetrachloroethane	SW846-8260B UP	5	µg/L
Tetrachloroethene	SW846-8260B UP	5	µg/L
Toluene	SW846-8260B UP	5	µg/L
1,1,1-Trichloroethane	SW846-8260B UP	5	µg/L
1,1,2-Trichloroethane	SW846-8260B UP	5	µg/L
Trichloroethene	SW846-8260B UP	5	µg/L
Trichlorofluoromethane	SW846-8260B UP	5	µg/L
1,2,3-Trichloropropane	SW846-8260B UP	10	µg/L
Vinyl acetate	SW846-8260B UP	10	µg/L
Vinyl chloride	SW846-8260B UP	2	µg/L
Radiological Analytes		Target MDA⁵	
Gross Alpha Activity	EPA-900.0	3.5	pCi/L
Gross Beta Activity	EPA-900.0	7.0	pCi/L
Americium-241	Y/P65-7226	0.4	pCi/L
Iodine-129	EPA-901.1	3.0	pCi/L
Neptunium-237	Y/P65-7206	0.4	pCi/L
Plutonium-238 & -239/240	Y/P65-7226	0.4	pCi/L
Radium-223/224/226	EPA-903.0 / 904.0	0.5	pCi/L
Strontium-89/90	Y/P65-7037	4.0	pCi/L
Technetium-99	Y/P65-7154	10	pCi/L
Thorium-228, 230, 232, & 234	Y/P65-7052	0.4	pCi/L
Tritium	EPA-906.0	300	pCi/L
Uranium-234, 235, & 238	Y/P65-7061	0.4	pCi/L
Total Uranium and weight% Uranium-234, 235, & 238	Y/P65-8044	0.002	mg/L

Table B.5 (continued)

Notes:

1 Analytical/field methods/procedures from:

- ! Y-12 System Operation Procedures (BWXT Y-12 2000b, BWXT Y-12 2001a, and LMES 1999b)
- ! *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (U.S. Environmental Protection Agency 1996)
- ! *Methods for Chemical Analysis of Water and Wastes* (U.S. Environmental Protection Agency 1983)
- ! BWXT Y-12 Analytical Chemistry Organization Control Procedures:
(Y/P65-7037, Y/P65-7052, Y/P65-7061, Y/P65-7154, Y/P65-7206, Y/P65-7226, and Y/P65-8044)

2 The lowest concentration reported.

NA - not applicable

3 ft - feet

$\mu\text{g/L}$ - micrograms per liter

$\mu\text{mho}/\text{cm}$ - micromhos per centimeter

mg/L - milligrams per liter

mV - millivolts

NTU - nephelometric turbidity units

ppm - parts per million

pCi/L - picoCuries per liter

4 CRQL - contract-required quantitation limit; estimated values are reported below this level and above the instrument detection limit. Results below the instrument detection limit are reported as not detected at the CRQL.

5 MDA - minimum detectable activity. The target MDA may be obtained under optimal analytical conditions; actual MDAs are sample-specific and, in some cases, may vary significantly from the target value.

Table B.6. Depth-to-water measurements and groundwater elevations in the Bear Creek Hydrogeologic Regime, April and September 2001

Groundwater Elevation (ft above mean sea level)			September 13-26, 2001						
			April 2-3, 2001						
			Seasonal Fluctuation (+/- ft)						
Depth-to-Water (ft below measuring point)			September 13-26, 2001						
			April 2-3, 2001						
Well Number	Location ¹	Hydrogeologic Unit ²		Measuring Pt. Elevation ³					
		Aquifer	Aquitard						
GW-001	OLF		Ž	981.00	15.10	17.06	-1.96	965.90	963.94
GW-005	OLF		Ž	967.81	7.03	7.43	-0.40	960.78	960.38
GW-008	OLF		Ž	965.39	15.15	16.18	-1.03	950.24	949.21
GW-010	OLF		Ž	952.70	2.24	3.28	-1.04	950.46	949.42
GW-011	OLF		Ž	953.60	4.31	4.64	-0.33	949.29	948.96
GW-012	OLF		Ž	955.57	7.20	7.66	-0.46	948.37	947.91
GW-013	OLF		Ž	965.12	5.71	6.35	-0.64	959.41	958.77
GW-014	BG		Ž	934.50	6.55	7.34	-0.79	927.95	927.16
GW-016	BG		Ž	928.80	10.49	11.83	-1.34	918.31	916.97
GW-018	BG		Ž	924.49	8.39	21.53	-13.14	916.10	902.96
GW-041	BG		Ž	1008.10	18.21	22.78	-4.57	989.89	985.32
GW-045	BG	M		910.30	12.33	13.83	-1.50	897.97	896.47
GW-046	BG		Ž	921.17	4.15	10.84	-6.69	917.02	910.33
GW-047	BG		Ž	929.00	8.08	9.38	-1.30	920.92	919.62
GW-052	BG	M		905.70	12.70	17.53	-4.83	893.00	888.17
GW-053	BG	Ž		903.40	7.95	10.85	-2.90	895.45	892.55
GW-065	OLF	Ž		982.50	28.60	28.89	-0.29	953.90	953.61
GW-067	OLF	Ž		961.60	9.98	10.53	-0.55	951.62	951.07
GW-080	BG		Ž	981.00	23.17	25.32	-2.15	957.83	955.68
GW-084	OLF		Ž	997.20	14.48	16.14	-1.66	982.72	981.06
GW-086	OLF		Ž	982.80	13.61	14.86	-1.25	969.19	967.94
GW-090	BG		Ž	961.88	5.92	7.03	-1.11	955.96	954.85
GW-091	BG		Ž	953.48	8.15	9.73	-1.58	945.33	943.75
GW-097	OLF		Ž	945.30	10.05	11.19	-1.14	935.25	934.11
GW-100	S3	Ž		987.40	4.88	6.18	-1.30	982.52	981.22
GW-101	S3		Ž	1008.00	10.20	10.34	-0.14	997.80	997.66
GW-115	S3		Ž	1055.01	10.53	[47.65] ⁴	NA ⁵	1044.48	NA
GW-127	S3		Ž	1005.90	13.27	15.53	-2.26	992.63	990.37
GW-236	S3	Ž		983.21	10.93	11.40	-0.47	972.28	971.81
GW-243	S3		Ž	1011.75	NM ⁶	17.53	NA	NA	994.22
GW-244	S3		Ž	1009.24	NM	14.34	NA	NA	994.90
GW-245	S3		Ž	1009.08	13.17	14.07	-0.90	995.91	995.01
GW-246	S3		Ž	1009.91	NM	14.23	NA	NA	995.68
GW-247	S3		Ž	1009.61	NM	14.56	NA	NA	995.05

Table B.6 (continued)

Groundwater Elevation (ft above mean sea level)				September 13-26, 2001					
				April 2-3, 2001					
				Seasonal Fluctuation (+/- ft)					
Depth-to-Water (ft below measuring point)				September 13-26, 2001					
Well Number	Location ¹	Hydrogeologic Unit ²		Measuring Pt. Elevation ³	April 2-3, 2001				
		Aquifer	Aquitard						
GW-249	BG		Ž	991.15	34.05	37.90	-3.85	957.10	953.25
GW-257	BG		Ž	961.68	28.58	29.79	-1.21	933.10	931.89
GW-276	S3		Ž	1001.57	6.17	7.35	-1.18	995.40	994.22
GW-277	S3		Ž	1001.76	6.77	7.29	-0.52	994.99	994.47
GW-287	BG		Ž	927.07	9.22	9.56	-0.34	917.85	917.51
GW-289	BG		Ž	948.73	16.39	18.33	-1.94	932.34	930.40
GW-291	BG		Ž	948.56	10.84	12.94	-2.10	937.72	935.62
GW-307	RS	Ž		993.14	30.78	32.80	-2.02	962.36	960.34
GW-309	RS	Ž		988.17	20.70	21.89	-1.19	967.47	966.28
GW-310	RS	Ž		995.35	20.98	21.51	-0.53	974.37	973.84
GW-316	SPI	Ž		1047.17	57.22	59.63	-2.41	989.95	987.54
GW-323	SPI	Ž		1130.11	84.39	86.20	-1.81	1045.72	1043.91
GW-325	S3		Ž	1003.00	13.25	17.84	-4.59	989.75	985.16
GW-345	S3		Ž	999.66	18.63	18.88	-0.25	981.03	980.78
GW-347	S3	M		1001.05	16.33	18.34	-2.01	984.72	982.71
GW-370	BG		Ž	960.82	15.16	17.11	-1.95	945.66	943.71
GW-372	BG		Ž	983.20	20.97	28.23	-7.26	962.23	954.97
GW-531	LD		Ž	1004.61	16.04	18.79	-2.75	988.57	985.82
GW-537	OLF		Ž	976.44	6.78	7.85	-1.07	969.66	968.59
GW-613	S3		Ž	1013.57	13.33	16.48	-3.15	1000.24	997.09
GW-621	EXP-B	Ž		925.44	11.72	15.96	-4.24	913.72	909.48
GW-622	BG		Ž	924.16	10.02	12.16	-2.14	914.14	912.00
GW-624	BG		Ž	922.14	10.99	12.39	-1.40	911.15	909.75
GW-626	BG		Ž	942.87	25.99	28.80	-2.81	916.88	914.07
GW-630	LD		Ž	986.65	9.74	10.29	-0.55	976.91	976.36
GW-637	OLF		Ž	941.83	6.88	9.35	-2.47	934.95	932.48
GW-638	OLF		Ž	941.77	5.82	8.56	-2.74	935.95	933.21
GW-641	BG		Ž	946.66	19.08	19.95	-0.87	927.58	926.71
GW-642	BG		Ž	1014.90	19.20	22.62	-3.42	995.70	992.28
GW-648	RS	M		1029.20	66.98	70.32	-3.34	962.22	958.88
GW-652	BG	M		900.83	10.09	12.16	-2.07	890.74	888.67
GW-653	BG		Ž	931.80	23.24	41.67	-18.43	908.56	890.13
GW-654	BG		Ž	940.79	7.22	8.86	-1.64	933.57	931.93

Table B.6 (continued)

Groundwater Elevation (ft above mean sea level)			September 13-26, 2001					
			April 2-3, 2001					
			Seasonal Fluctuation (+/- ft)					
Depth-to-Water (ft below measuring point)			September 13-26, 2001					
			April 2-3, 2001					
Well Number	Location ¹	Hydrogeologic Unit ²	Measuring Pt. Elevation ³					
Aquifer	Aquitard							
GW-715	EXP-W	Ž	874.92	28.90	29.00	-0.10	846.02	845.92
GW-795	AGLLSF	Ž	925.98	5.07	3.56	1.51	920.91	922.42
GW-835	S3	Ž	1000.91	NM	15.53	NA	NA	985.38

Notes:

- 1 AGLLSF - Above Grade Low-Level Storage Facility
 BG - Bear Creek Burial Grounds Waste Management Area
 EXP-B - Exit Pathway (Maynardville Limestone) Picket B
 EXP-W - Exit Pathway (Maynardville Limestone) Picket W
 LD - Lysimeter Demonstration Site
 OLF - Oil Landfarm Waste Management Area
 RS - Rust Spoil Area
 SPI - Spoil Area I
 S3 - S-3 Site
- 2 Aquifer - Well completed in the upper Conasauga Group (Maynardville Limestone) or Knox Group
 Aquitard - Well completed in the lower Conasauga Group (Nolichucky Shale, Maryville Limestone, Rogersville Shale, Rutledge Limestone, and Pumpkin Valley Shale) or Rome Formation (see Figure A.7)
- 3 Measuring point elevation in feet above mean sea level. The measuring point is either the top of the innermost well casing or the top of dedicated sampling equipment mounted on the casing.
- 4 [] - Spurious measurement
- 5 NA - Not Applicable
- 6 NM - Not Measured

**Table B.7. Depth-to-water measurements and groundwater elevations in the Upper East Fork
Poplar Creek Hydrogeologic Regime, April and September 2001**

Groundwater Elevation (ft above mean sea level)		September 19-26, 2001							
		April 2-4, 2001							
		Seasonal Fluctuation (+/- ft)							
Depth-to-Water (ft below measuring point)		September 19-26, 2001							
		April 2-4, 2001							
Well Number	Location ¹	Hydrogeologic Unit ²		Measuring Point Elevation ³					
		Aquifer	Aquitard						
53-1A	Y12		Ž	993.65	2.25	NM ⁴	NA ⁵	991.40	NA
55-1A	Y12		Ž	986.67	10.78	10.41	0.37	975.89	976.26
55-3A	Y12		Ž	972.46	11.41	11.03	0.38	961.05	961.43
55-6A	Y12		Ž	989.04	9.60	9.29	0.31	979.44	979.75
56-1A	Y12		Ž	969.25	7.73	7.69	0.04	961.52	961.56
56-2A	Y12		Ž	963.30	7.78	7.38	0.40	955.52	955.92
56-8A	Y12	Ž		962.46	20.21	19.17	1.04	942.25	943.29
60-1A	Y12	Ž		929.66	12.58	11.45	1.13	917.08	918.21
GW-105	S3		Ž	1018.20	8.87	9.44	-0.57	1009.33	1008.76
GW-106	S3		Ž	1017.30	4.68	5.45	-0.77	1012.62	1011.85
GW-107	S3		Ž	999.00	7.66	7.52	0.14	991.34	991.48
GW-108	S3		Ž	999.00	7.83	7.62	0.21	991.17	991.38
GW-115	S3		Ž	1055.01	10.53	[47.65] ⁶	NA	1044.48	NA
GW-148	NHP	Ž		907.56	8.23	8.63	-0.40	899.33	898.93
GW-150	NHP	Ž		915.56	14.09	14.07	0.02	901.47	901.49
GW-152	NHP	Ž		921.18	20.05	19.99	0.06	901.13	901.19
GW-154	NHP	Ž		911.50	9.81	8.87	0.94	901.69	902.63
GW-167	EXP	Ž		931.97	31.22	30.93	0.29	900.75	901.04
GW-169	EXP-UV	Ž		932.12	32.30	32.27	0.03	899.82	899.85
GW-171	EXP-UV	Ž		920.72	5.05	8.92	-3.87	915.67	911.80
GW-191	B4		Ž	1011.27	4.57	3.31	1.26	1006.70	1007.96
GW-192	B4		Ž	1008.83	6.00	5.07	0.93	1002.83	1003.76
GW-193	T2331		Ž	934.17	8.95	8.20	0.75	925.22	925.97
GW-195	B4		Ž	1002.90	6.92	6.63	0.29	995.98	996.27
GW-199	GRIDI1		Ž	961.08	17.00	16.67	0.33	944.08	944.41
GW-202	RDS			968.02	10.02	10.09	-0.07	958.00	957.93
GW-204	T0134			958.77	NM	9.28	NA	NA	949.49
GW-218	UOV	Ž		936.01	14.60	14.58	0.02	921.41	921.43
GW-219	UOV	Ž		935.84	10.80	9.61	1.19	925.04	926.23
GW-253	S2	Ž		1004.24	9.70	17.79	-8.09	994.54	986.45
GW-255	S2	Ž		1027.13	27.64	37.73	-10.09	999.49	989.40
GW-261	SY		Ž	1049.99	17.00	17.99	-0.99	1032.99	1032.00
GW-263	SY		Ž	1057.73	26.16	29.67	-3.51	1031.57	1028.06

Table B.7 (continued)

Groundwater Elevation (ft above mean sea level)		September 19-26, 2001							
		April 2-4, 2001							
		Seasonal Fluctuation (+/- ft)							
Depth-to-Water (ft below measuring point)		September 19-26, 2001							
		April 2-4, 2001							
Well Number	Location ¹	Hydrogeologic Unit ²		Measuring Point Elevation ³					
		Aquifer	Aquitard						
GW-334	WC		Ž	983.73	11.84	10.86	0.98	971.89	972.87
GW-335	WC		Ž	981.88	10.92	9.30	1.62	970.96	972.58
GW-349	S2	Ž		993.50	4.42	3.98	0.44	989.08	989.52
GW-380	NHP	Ž		913.55	10.71	10.82	-0.11	902.84	902.73
GW-383	NHP		Ž	908.77	9.33	9.41	-0.08	899.44	899.36
GW-384	NHP		Ž	909.23	11.09	11.23	-0.14	898.14	898.00
GW-617	EXP-E	Ž		985.31	13.65	14.04	-0.39	971.66	971.27
GW-618	EXP-E	Ž		985.14	13.47	13.90	-0.43	971.67	971.24
GW-619	FTF	Ž		1015.50	24.48	21.30	3.18	991.02	994.20
GW-620	FTF	Ž		1015.54	25.38	25.17	0.21	990.16	990.37
GW-686	CPT	Ž		963.76	12.75	12.66	0.09	951.01	951.10
GW-691	CPT	Ž		968.59	12.01	11.86	0.15	956.58	956.73
GW-699	B8110	Ž		971.14	16.06	16.09	-0.03	955.08	955.05
GW-735	EXP-J		Ž	924.46	23.85	24.03	-0.18	900.61	900.43
GW-746	GRIDK1		Ž	906.88	4.52	4.82	-0.30	902.36	902.06
GW-749	GRIDK2		Ž	921.19	5.62	4.54	1.08	915.57	916.65
GW-752	GRIDJ3		Ž	912.78	3.72	4.37	-0.65	909.06	908.41
GW-754	GRIDJ2		Ž	928.78	10.00	10.97	-0.97	918.78	917.81
GW-756	GRIDJ1		Ž	928.12	6.01	6.20	-0.19	922.11	921.92
GW-759	GRIDG1		Ž	994.01	18.48	15.16	3.32	975.53	978.85
GW-761	GRIDG2		Ž	968.23	9.67	10.15	-0.48	958.56	958.08
GW-763	GRIDJ3		Ž	915.05	9.60	9.80	-0.20	905.45	905.25
GW-765	GRIDE1		Ž	1008.54	19.55	19.20	0.35	988.99	989.34
GW-767	GRIDI2		Ž	948.54	11.82	10.65	1.17	936.72	937.89
GW-770	GRIDG3		Ž	944.71	12.80	10.91	1.89	931.91	933.80
GW-772	GRIDC1		Ž	1012.66	9.18	9.71	-0.53	1003.48	1002.95
GW-774	GRIDH2		Ž	963.16	14.57	11.21	3.36	948.59	951.95
GW-776	GRIDH3		Ž	931.25	13.35	10.03	3.32	917.90	921.22
GW-780	GRIDF2		Ž	963.40	13.37	13.36	0.01	950.03	950.04
GW-783	GRIDE3		Ž	948.49	10.34	10.22	0.12	938.15	938.27
GW-785	GRIDD1		Ž	1009.43	10.60	8.86	1.74	998.83	1000.57
GW-787	GRIDE2		Ž	987.85	15.27	16.11	-0.84	972.58	971.74
GW-792	GRIDD2		Ž	992.74	24.82	15.87	8.95	967.92	976.87
GW-816	EXP-SR		Ž	898.41	13.46	13.98	-0.52	884.95	884.43
GW-817	GRIDK3		Ž	918.32	7.04	8.72	-1.68	911.28	909.60

Table B.7 (continued)

Notes:

- 1 B4 - Beta-4 Security Pits
B8110 - Building 81-10
CPT - Coal Pile Trench
EXP - Exit Pathway (Maynardville Limestone) monitoring well
 ! -E or -J: Maynardville Limestone Picket
 ! -UV: Offsite in Union Valley
 ! -SR: Along Scarboro Road in the gap through Pine Ridge
FTF - Fire Training Facility
GRID - Comprehensive Groundwater Monitoring Plan Grid Location
NHP - New Hope Pond
RDS - Ravine Disposal Site
RG - Rust Garage Area
S2 - S-2 Site
S3 - S-3 Ponds Site
SY - Y-12 Plant Salvage Yard
T0134 - Tank 0134-U
T2331 - Tank 2331-U
UOV - Uranium Oxide Vault
WC - Waste Coolant Processing Area
Y12 - Y-12 Complex
- 2 Aquifer - Well completed in the upper Conasauga Group (Maynardville Limestone) or Knox Group
Aquitard - Well completed in the lower Conasauga Group (Nolichucky Shale, Maryville Limestone, Rogersville Shale, Rutledge Limestone, and Pumpkin Valley Shale) or Rome Formation (see Figure A.8)
- 3 Measuring point elevation is in feet above mean sea level. The measuring point is either the top of the innermost well casing or the top of dedicated sampling equipment.
- 4 NM - Not measured
- 5 NA - Not applicable
- 6 [] - Spurious depth-to-water measurement

Table B.8. Depth-to-water measurements and groundwater elevations in the Chestnut Ridge Hydrogeologic Regime, April and September 2001

Groundwater Elevation (ft above mean sea level)		September 13-25, 2001					
		April 2-6, 2001					
		Seasonal Fluctuation (+/- ft)					
Depth-to-Water (ft below measuring point)		September 13-25, 2001					
		April 2-6, 2001					
Well Number	Location ¹	Measuring Point Elevation ²					
1082	ORSF	837.28	25.49	25.60	-0.11	811.79	811.68
1084	ORSF	965.40	62.33	62.71	-0.38	903.07	902.69
1090	UNCS	1104.48	52.18	58.88	-6.70	1052.30	1045.60
GW-141	LIV	1186.23	95.73	98.44	-2.71	1090.50	1087.79
GW-142	KHQ	971.15	137.20	138.50	-1.30	833.95	832.65
GW-143	KHQ	913.98	81.10	81.71	-0.61	832.88	832.27
GW-144	KHQ	913.54	81.03	81.70	-0.67	832.51	831.84
GW-145	KHQ	840.24	19.60	10.59	9.01	820.64	829.65
GW-146	KHQ	838.16	3.55	5.36	-1.81	834.61	832.80
GW-147	KHQ	851.62	18.35	19.01	-0.66	833.27	832.61
GW-156	CRSDB	1049.30	143.49	143.78	-0.29	905.81	905.52
GW-158	CRSDB	983.05	46.90	49.81	-2.91	936.15	933.24
GW-159	CRSDB	1051.40	117.28	118.66	-1.38	934.12	932.74
GW-160	CRBAWP	1093.09	145.61	142.14	3.47	947.48	950.95
GW-161	CRBAWP	1093.54	160.15	161.99	-1.84	933.39	931.55
GW-173	CRSP	1115.00	146.29	150.78	-4.49	968.71	964.22
GW-174	CRSP	1116.66	112.97	117.82	-4.85	1003.69	998.84
GW-175	CRSP	1084.19	118.93	125.37	-6.44	965.26	958.82
GW-176	CRSP	1125.30	116.01	116.08	-0.07	1009.29	1009.22
GW-177	CRSP	1158.20	117.67	120.25	-2.58	1040.53	1037.95
GW-178	CRSP	1143.49	91.35	98.70	-7.35	1052.14	1044.79
GW-179	CRSP	1128.00	115.99	115.49	0.50	1012.01	1012.51
GW-180	CRSP	1104.14	109.25	124.15	-14.90	994.89	979.99
GW-184	RQ	927.63	110.18	110.24	-0.06	817.45	817.39
GW-186	RQ	831.32	14.42	14.94	-0.52	816.90	816.38
GW-203	UNCS	1105.45	81.13	61.80	19.33	1024.32	1043.65
GW-205	UNCS	1104.14	78.05	83.72	-5.67	1026.09	1020.42
GW-217	LIV	1177.06	109.90	117.31	-7.41	1067.16	1059.75
GW-221	UNCS	1106.16	82.96	88.40	-5.44	1023.20	1017.76
GW-231	KHQ	849.67	16.27	16.97	-0.70	833.40	832.70
GW-241	CRSDB	982.84	50.42	55.40	-4.98	932.42	927.44
GW-292	ECRWP	1073.00	113.03	115.05	-2.02	959.97	957.95
GW-293	ECRWP	1063.90	115.55	117.45	-1.90	948.35	946.45

Table B.8 (continued)

Groundwater Elevation (ft above mean sea level)		September 13-25, 2001					
		April 2-6, 2001					
		Seasonal Fluctuation (+/- ft)					
Depth-to-Water (ft below measuring point)		September 13-25, 2001					
		April 2-6, 2001					
Well Number	Location ¹	Measuring Point Elevation ²					
GW-298	CRBAWP	1049.01	109.39	111.01	-1.62	939.62	938.00
GW-299	CRBAWP	1053.86	99.52	104.13	-4.61	954.34	949.73
GW-300	CRBAWP	1073.12	113.89	119.43	-5.54	959.23	953.69
GW-301	CRBAWP	1086.55	133.10	136.65	-3.55	953.45	949.90
GW-302	UNCS	1141.84	89.58	106.75	-17.17	1052.26	1035.09
GW-303	CRSDB	1007.16	87.59	88.71	-1.12	919.57	918.45
GW-304	CRSDB	1045.49	117.10	118.27	-1.17	928.39	927.22
GW-305	LIV	1183.75	122.00	128.42	-6.42	1061.75	1055.33
GW-322	CRSP	1135.05	152.49	164.89	-12.40	982.56	970.16
GW-339	UNCS	1124.83	72.28	79.18	-6.90	1052.55	1045.65
GW-511	CRSP	1093.21	106.10	115.25	-9.15	987.11	977.96
GW-512	FCAP	1001.54	24.37	30.90	-6.53	977.17	970.64
GW-514	FCAP	1001.22	24.59	31.67	-7.08	976.63	969.55
GW-521	LIV	1182.88	83.17	90.19	-7.02	1099.71	1092.69
GW-522	LIV	1175.49	101.20	112.25	-11.05	1074.29	1063.24
GW-539	LII	1093.00	108.14	112.96	-4.82	984.86	980.04
GW-540	CDLVI	1072.32	84.44	87.78	-3.34	987.88	984.54
GW-541	CDLVI	1058.40	64.74	65.35	-0.61	993.66	993.05
GW-542	CDLVI	1051.77	70.17	71.58	-1.41	981.60	980.19
GW-543	CDLVI	1023.98	64.40	64.36	0.04	959.58	959.62
GW-544	CDLVI	1045.20	62.58	64.59	-2.01	982.62	980.61
GW-546	CDLVI	1072.21	84.58	NM ³	NA ⁴	987.63	NA
GW-557	LV	1081.36	122.29	124.43	-2.14	959.07	956.93
GW-558	SSCR	981.42	50.30	53.48	-3.18	931.12	927.94
GW-559	SSCR	1102.79	138.62	142.00	-3.38	964.17	960.79
GW-560	CDLVII	949.05	44.08	46.89	-2.81	904.97	902.16
GW-562	CDLVII	934.69	8.92	12.19	-3.27	925.77	922.50
GW-564	CDLVII	937.97	11.37	12.55	-1.18	926.60	925.42
GW-608	CRSP	1074.75	136.15	139.60	-3.45	938.60	935.15
GW-609	CRSP	1112.31	165.02	168.76	-3.74	947.29	943.55
GW-610	CRSP	1059.44	82.90	91.55	-8.65	976.54	967.89
GW-611	CRSP	1048.38	99.53	108.93	-9.40	948.85	939.45
GW-612	CRSP	1131.03	122.20	129.65	-7.45	1008.83	1001.38

Table B.8 (continued)

Groundwater Elevation (ft above mean sea level)		September 13-25, 2001					
		April 2-6, 2001					
		Seasonal Fluctuation (+/- ft)					
Depth-to-Water (ft below measuring point)		September 13-25, 2001					
		April 2-6, 2001					
Well Number	Location ¹	Measuring Point Elevation ²					
GW-673	FCAP	882.01	10.08	10.29	-0.21	871.93	871.72
GW-674	FCAP	883.79	7.50	8.29	-0.79	876.29	875.50
GW-676	FCAP	846.50	4.66	6.27	-1.61	841.84	840.23
GW-677	FCAP	1030.40	27.50	33.62	-6.12	1002.90	996.78
GW-678	FCAP	1000.70	20.34	27.65	-7.31	980.36	973.05
GW-679	FCAP	1026.90	52.10	57.88	-5.78	974.80	969.02
GW-680	FCAP	1001.50	28.42	32.05	-3.63	973.08	969.45
GW-709	LII	906.78	29.40	28.05	1.35	877.38	878.73
GW-731	CRSDB	1049.38	125.02	125.52	-0.50	924.36	923.86
GW-732	CRSDB	1064.29	157.85	157.85	0.00	906.44	906.44
GW-743	CRSP	1100.36	128.98	139.33	-10.35	971.38	961.03
GW-757	LII	961.61	84.42	84.37	0.05	877.19	877.24
GW-796	LV	1052.62	78.88	85.87	-6.99	973.74	966.75
GW-797	LV	1060.00	73.90	77.34	-3.44	986.10	982.66
GW-798	CDLVII	1006.00	80.57	84.86	-4.29	925.43	921.14
GW-799	LV	981.29	16.84	20.79	-3.95	964.45	960.50
GW-801	LV	1097.16	112.28	119.18	-6.90	984.88	977.98
GW-827	CDLVI	1051.58	44.00	46.60	-2.60	1007.58	1004.98
GW-831	FCAP	1091.29	129.43	132.82	-3.39	961.86	958.47

Notes:

- 1 CDLVI - Construction/Demolition Landfill VI
- CDLVII - Construction/Demolition Landfill VII
- CRBAWP - Chestnut Ridge Borrow Area Waste Pile
- CRSDB - Chestnut Ridge Sediment Disposal Basin
- CRSP - Chestnut Ridge Security Pits
- ECRWP - East Chestnut Ridge Waste Pile
- FCAP - Filled Coal Ash Pond
- KHQ - Kerr Hollow Quarry
- LII - Industrial Landfill II
- LIV - Industrial Landfill IV
- LV - Industrial Landfill V
- ORSF - Oak Ridge Sludge Farm
- RQ - Rogers Quarry
- SSCR - South Side Chestnut Ridge
- UNCS - United Nuclear Corporation Site

Table B.8 (continued)

Notes (continued):

- 2 Measuring point elevation is in feet above mean sea level. The measuring point is either the top of the innermost well casing or the top of dedicated sampling equipment mounted on the casing.
- 3 NM - Not Measured
- 4 NA - Not Applicable

APPENDIX C
MONITORING WELL CONSTRUCTION DETAILS

EXPLANATION

Hydrogeologic Regime:

BC	-	Bear Creek Hydrogeologic Regime
CR	-	Chestnut Ridge Hydrogeologic Regime
EF	-	Upper East Fork Poplar Creek Hydrogeologic Regime

Location:

B4	-	Beta-4 Security Pits
BG	-	Bear Creek Burial Grounds WMA
CDLVI	-	Construction/Demolition Landfill VI
CDLVII	-	Construction/Demolition Landfill VII
CPT	-	Coal Pile Trench
CRBAWP	-	Chestnut Ridge Borrow Area Waste Pile
CRSDB	-	Chestnut Ridge Sediment Disposal Basin
CRSP	-	Chestnut Ridge Security Pits
EMWMF	-	Environmental Management Waste Management Facility
EXP	-	Exit Pathway Monitoring Location: Maynardville Limestone Picket (-A, -B, -C, -E, -I, -J, and -W) Along Scarboro Road in the gap through Pine Ridge (-SR) East of Scarboro Road in Union Valley (-UV)
FCAP	-	Filled Coal Ash Pond
FTF	-	Fire Training Facility
GRID	-	Comprehensive Groundwater Monitoring Plan Grid Location
KHQ	-	Kerr Hollow Quarry
LII	-	Industrial Landfill II
LIV	-	Industrial Landfill IV
LV	-	Industrial Landfill V
NHP	-	New Hope Pond
OLF	-	Oil Landfarm WMA
RS	-	Rust Spoil Area
S2	-	S-2 Site
S3	-	S-3 Site
SPI	-	Spoil Area I
T0134	-	Tank 0134-U
T2331	-	Tank 2331-U, near Building 9201-1
UNCS	-	United Nuclear Corporation Site
UOV	-	Uranium Oxide Vault

EXPLANATION (continued)

General Information:

Coordinates	- Y-12 grid system (rounded to nearest foot)
Measuring Point	- Top of well casing or Well Wizard™
Elevation	- Feet above mean sea level (rounded to nearest 0.01 ft)
Depth	- Feet below ground surface (rounded to nearest 0.1 ft)
Diameter	- Outside dimensions, in inches (nominal)
.	- Not Applicable or not available

Conductor (Surface) Casing and Well Casing:

Diameter	- Outside dimensions, in inches (nominal)
PVC/#40	- Polyvinyl chloride, schedule 40
SS/#304	- Stainless steel, schedule 304
Steel	- Carbon steel
F25/J55	- American Petroleum Institute Grade

Monitored Interval:

Hydrostratigraphic Unit:

AQF	- Knox Aquifer (Maynardville Limestone and Knox Group)
AQT	- ORR Aquitard (other formations of the Conasauga Group)

Aquifer Zone:

BDR	- Bedrock interval (monitored interval top is in fresh rock)
WT	- Water table interval (monitored interval top is above fresh rock)

Geologic Formation:

Och	- Chickamauga Group, undifferentiated
OCl	- Knox Group, undifferentiated
CC	- Conasauga Group, undifferentiated
Cm	- Maryville Limestone
Cn	- Nolichucky Shale
Cmn	- Maynardville Limestone
Cpv	- Pumpkin Valley Shale
Crg	- Rogersville Shale
Cr	- Rome Formation

Monitored Interval:

Top	- Depth to top of filter pack or open-hole
Bottom	- Depth to bottom of filter pack or open-hole

Screen Material:

PVC/sl/.01	- PVC/slotted, 0.01 inch slot size
PVC/sw/.01	- PVC, spiral wound, 0.01 inch slot size
SS/sw/.01	- Stainless steel, spiral wound, 0.01 inch slot size
SS/pp/.01	- Stainless steel prepack screen, spiral wound, 0.01 inch slot size

NOTE:

Data compiled from the *Updated Subsurface Data Base for Bear Creek Valley, Chestnut Ridge, and parts of Bethel Valley on the U.S. Department of Energy Oak Ridge Reservation* (LMES 1998).

APPENDIX C: MONITORING WELL CONSTRUCTION DETAILS, 2001

Well Number Hydrogeologic Regime Location	1090 CR UNCS	GW-008 BC OLF	GW-046 BC BG	GW-053 BC BG	GW-056 BC EXP-A	GW-077 BC BG	GW-078 BC BG	GW-079 BC BG	GW-080 BC BG
General Information									
Date Installed	.	09/21/83	10/27/83	11/04/83	03/27/84	03/29/84	03/30/84	03/23/84	03/24/84
Total Depth Drilled	96.7	25.5	20.5	39.7	55.2	100.5	21.1	65.0	30.0
East Coordinate	53,853	47,597	43,284	43,091	41,384	41,234	41,210	41,619	41,622
North Coordinate	28,718	29,781	29,562	29,061	28,698	29,731	29,732	30,632	30,624
Measuring Point Elevation	1,104.48	965.39	921.17	903.40	891.50	919.30	918.10	981.20	981.00
Surface Elevation	1,101.58	962.11	918.13	900.50	886.80	914.70	914.50	977.20	977.10
Hydrostratigraphic Unit	AQF	AQT	AQT	AQF	AQF	AQT	AQT	AQT	AQT
Geologic Formation	OCK	Cn	Cn	Cmn	Cmn	Cn	Cn	Crg	Crg
Aquifer Zone	WT	WT	WT	WT	BDR	BDR	BDR	BDR	WT
Weathered Rock-Depth	.	0.6	7.7	4.0	.	7.0	6.5	4.0	3.5
Weathered Rock-Elevation	.	961.51	909.51	896.33	.	907.42	907.88	973.14	973.53
Fresh Rock-Depth	.	.	.	.	6.4	13.0	8.5	26.5	23.5
Fresh Rock-Elevation	.	.	.	.	880.25	901.42	905.88	950.64	953.53
Conductor Casing									
Casing Depth	.	.	.	4.0	32.0	35.0	.	.	.
Casing Diameter	.	.	.	6.5	4.5	4.5	.	.	.
Casing Material	none	unknown	none	PVC/#40	PVC/#40	PVC/#40	none	none	none
Well Casing									
Borehole Depth	96.7	25.5	20.5	39.7	55.2	100.5	21.1	65.0	30.0
Borehole Diameter	8	4.5	6	4	4	3.88	6.5	6.5	6.5
Casing Depth	.	15.7	8.1	26.6	53.2	90.3	16.1	59.9	24.7
Casing Diameter	6.5	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37
Casing Material	PVC/#40	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304
Monitored Interval									
Top-Depth	.	13.0	5.0	11.4	49.1	87.4	11.7	49.9	20.8
Midpoint-Depth	.	19.3	12.7	22.1	52.2	93.9	16.4	57.4	25.3
Bottom-Depth	.	25.5	20.3	32.8	55.2	100.3	21.1	64.9	29.7
Top-Elevation	.	949.11	912.21	888.93	837.55	827.02	902.68	927.24	956.23
Midpoint-Elevation	.	942.86	904.56	878.23	834.50	820.57	897.98	919.74	951.78
Bottom-Elevation	.	936.61	896.91	867.53	831.45	814.12	893.28	912.24	947.33
Screen Material	PVC/sl	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01
Screen Length	.	5	10	5	2	10	5	5	5
Open-Hole Length	.	.	.	.	.	.	.	.	.
Open-Hole Diameter	.	.	.	.	.	.	.	.	.

APPENDIX C: MONITORING WELL CONSTRUCTION DETAILS, 2001

Well Number Hydrogeologic Regime Location	GW-082	GW-085	GW-098	GW-108	GW-115	GW-124	GW-141	GW-142	GW-143
	BC BG	BC OLF	BC OLF	EF S3	BC S3	BC S3	CR LIV	CR KHQ	CR KHQ
General Information									
Date Installed	03/17/84	03/22/84	09/21/84	09/26/84	.	07/23/85	09/04/87	10/03/85	10/24/85
Total Depth Drilled	35.0	62.0	104.0	58.6	53.0	150.0	156.0	295.0	253.0
East Coordinate	42,090	49,058	46,959	53,207	52,685	52,223	52,463	64,030	63,522
North Coordinate	30,434	30,002	29,452	30,069	31,073	29,656	28,755	24,524	24,257
Measuring Point Elevation	964.00	983.50	946.00	999.00	1,055.01	1,006.85	1,186.23	971.15	913.98
Surface Elevation	960.52	979.80	942.40	995.80	1,051.92	1,003.98	1,183.45	968.29	911.04
Hydrostratigraphic Unit	AQT	AQT	AQT	AQT	AQT	AQF	AQF	AQF	AQF
Geologic Formation	Cm	Cn	Cn	Cn	Cm	Cmn	Ock	Ock	Ock
Aquifer Zone	BDR	BDR	BDR	WT	WT	BDR	BDR	BDR	BDR
Weathered Rock-Depth	7.0	2.0	1.0	4.0	.	.	.	.	.
Weathered Rock-Elevation	952.49	977.82	940.84	991.61	.	.	.	.	.
Fresh Rock-Depth	23.0	40.0	7.5	.	.	30.0	57.0	.	18.0
Fresh Rock-Elevation	936.49	939.82	934.34	.	.	973.50	1126.50	.	893.04
Conductor Casing									
Casing Depth	25.0	.	20.0	20.7	.	30.5	65.0	20.0	20.0
Casing Diameter	6.5	.	10.63	10.63	.	10.75	10.75	12.5	10.63
Casing Material	PVC/#40	unknown	PVC/#40	PVC/#40	none	steel/F25	steel/F25	PVC/#40	PVC/#40
Well Casing									
Borehole Depth	35.0	62.0	104.0	58.6	53.0	100.0	156.0	250.0	205.0
Borehole Diameter	4	4	9	9	.	9.87	10	11	10
Casing Depth	29.4	53.8	82.4	46.7	42.0	100.0	144.5	248.5	205.0
Casing Diameter	2.37	2.37	4.5	4.5	2.37	4.5	4.5	6.62	6.62
Casing Material	SS/#304	SS/#304	SS/#304	PVC/#40	SS/#304	steel/F25	SS/#304	steel/F25	steel/F25
Monitored Interval									
Top-Depth	29.4	48.4	76.6	41.0	37.6	100.0	141.0	248.5	205.0
Midpoint-Depth	31.9	53.6	90.3	49.8	45.3	125.0	148.5	271.8	229.0
Bottom-Depth	34.4	58.8	104.0	58.6	53.0	150.0	156.0	295.0	253.0
Top-Elevation	930.09	931.42	865.24	954.61	1014.30	903.50	1042.50	719.79	706.04
Midpoint-Elevation	927.59	926.22	851.54	945.81	1006.60	878.50	1035.00	696.54	682.04
Bottom-Elevation	925.09	921.02	837.84	937.01	998.90	853.50	1027.50	673.29	658.04
Screen Material	SS/sw/.01	SS/sw/.01	SS/sw/.01	PVC/sl/.01	SS/sw/.01	.	SS/sw/.01	.	.
Screen Length	5	5	21	10.1	10	.	10.7	.	.
Open-Hole Length	.	.	.	.	.	50	.	46.5	48
Open-Hole Diameter	.	.	.	.	.	4	.	6	6

APPENDIX C: MONITORING WELL CONSTRUCTION DETAILS, 2001

Well Number Hydrogeologic Regime Location	GW-144	GW-145	GW-151	GW-153	GW-154	GW-156	GW-159	GW-169	GW-170
	CR KHQ	CR KHQ	EF NHP	EF NHP	EF NHP	CR CRSDB	CR CRSDB	EF EXP-UV	EF EXP-UV
General Information									
Date Installed	10/24/85	10/14/85	08/14/85	10/31/85	07/30/85	10/18/85	10/18/85	09/16/86	04/01/86
Total Depth Drilled	195.0	110.0	96.5	60.0	11.2	157.0	157.0	42.0	156.9
East Coordinate	63,502	63,266	64,232	63,728	63,346	64,020	63,496	66,855	66,843
North Coordinate	24,255	24,441	28,958	28,613	28,987	27,626	27,764	28,545	28,545
Measuring Point Elevation	913.54	840.24	916.17	921.64	911.70	1,049.30	1,051.40	932.12	932.63
Surface Elevation	910.48	837.29	913.06	918.53	908.60	1,046.94	1,048.79	929.95	930.70
Hydrostratigraphic Unit	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF
Geologic Formation	Och/OCK	OCK	Cmn	Cmn	Cmn	OCK	OCK	Cmn	Cmn
Aquifer Zone	BDR	WT	BDR	BDR	WT	BDR	BDR	WT	BDR
Weathered Rock-Depth	.	.	.	.	11.2	84.0	.	.	.
Weathered Rock-Elevation	.	.	.	.	897.40	962.90	.	.	.
Fresh Rock-Depth	.	.	12.0	14.0	.	93.0	100.0	.	30.0
Fresh Rock-Elevation	.	.	901.06	904.53	.	953.90	948.80	.	900.70
Conductor Casing									
Casing Depth	40.0	12.0	12.0	14.0	.	94.0	123.0	.	30.0
Casing Diameter	12.5	12.5	12.5	12.5	.	10.75	10.75	.	8.63
Casing Material	PVC/#40	PVC/#40	PVC/#40	PVC/#40	none	steel/F25	steel/F25	none	PVC/#40
Well Casing									
Borehole Depth	195.0	110.0	96.5	60.0	11.2	157.0	157.0	42.0	104.0
Borehole Diameter	11	11	11	11	8	8.5	8.5	8	6.62
Casing Depth	150.0	88.5	86.0	49.5	5.7	147.0	147.0	29.7	104.0
Casing Diameter	4.5	4.5	4.5	4.5	4.5	4.5	4.5	2.37	4.38
Casing Material	PVC/#40	PVC/#40	PVC/#40	PVC/#40	PVC/#40	PVC/#40	PVC/#40	PVC/#40	steel/
Monitored Interval									
Top-Depth	148.0	86.0	85.0	45.0	4.7	146.0	146.0	28.7	104.0
Midpoint-Depth	171.5	98.0	90.8	52.5	8.0	151.5	151.5	31.7	130.5
Bottom-Depth	195.0	110.0	96.5	60.0	11.2	157.0	157.0	34.7	156.9
Top-Elevation	762.48	751.29	828.06	873.53	903.90	900.90	902.80	901.25	826.70
Midpoint-Elevation	738.98	739.29	822.31	866.03	900.65	895.40	897.30	898.25	800.25
Bottom-Elevation	715.48	727.29	816.56	858.53	897.40	889.90	891.80	895.25	773.80
Screen Material	PVC/sw/.01	PVC/sw/.01	PVC/sw/.01	PVC/sw/.01	PVC/sw/.01	PVC/sw/.01	PVC/sw/.01	PVC/sl	.
Screen Length	40	20	10	10	5	10	10	5	.
Open-Hole Length	52.9
Open-Hole Diameter	3.88

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Well Number Hydrogeologic Regime Location	GW-171 EF EXP-UV	GW-172 EF EXP-UV	GW-174 CR CRSP	GW-175 CR CRSP	GW-177 CR CRSP	GW-180 CR CRSP	GW-192 EF B4	GW-193 EF T2331	GW-203 CR UNCS
General Information									
Date Installed	02/26/86	05/05/86	08/15/85	06/22/88	10/24/85	08/11/87	09/30/85	08/04/89	10/24/85
Total Depth Drilled	31.2	133.8	145.0	166.7	145.0	144.0	17.5	18.5	156.0
East Coordinate	69,654	69,579	59,215	58,686	57,497	59,220	54,277	59,536	54,190
North Coordinate	28,403	28,358	28,205	28,676	28,483	28,494	30,772	29,344	28,356
Measuring Point Elevation	920.72	926.57	1,116.50	1,084.00	1,158.20	1,103.97	1,008.83	934.17	1,105.45
Surface Elevation	918.55	922.85	1,114.06	1,081.89	1,155.52	1,101.43	1,006.04	931.11	1,102.34
Hydrostratigraphic Unit	AQF	AQF	AQF	AQF	AQF	AQF	AQT	AQF	AQF
Geologic Formation	Cmn	Cmn	OCK	OCK	OCK	OCK	Cm	Cmn	OCK
Aquifer Zone	WT	BDR	BDR	BDR	BDR	BDR	WT	WT	BDR
Weathered Rock-Depth	.	15.0	51.0	46.0	62.0	58.0	17.5	2.5	86.0
Weathered Rock-Elevation	.	907.85	1063.10	1035.90	1093.50	1043.40	988.50	928.61	1016.30
Fresh Rock-Depth	.	19.0	80.0	98.5	98.0	90.0	.	.	93.0
Fresh Rock-Elevation	.	903.85	1034.10	983.40	1057.50	1011.40	.	.	1009.30
Conductor Casing									
Casing Depth	.	35.0	80.0	61.3	82.0	90.6	.	.	94.0
Casing Diameter	.	8.63	10.75	10.75	10.75	10.75	.	.	10.75
Casing Material	none	steel/F25	steel/F25	unknown	steel/F25	steel/F25	none	none	steel/F25
Well Casing									
Borehole Depth	31.2	105.0	145.0	166.7	145.0	144.0	17.5	18.5	156.0
Borehole Diameter	8	6.62	10	9.5	8	10	6	8	8.5
Casing Depth	26.8	105.0	135.0	150.6	133.0	132.2	7.5	8.2	146.0
Casing Diameter	2.37	4.38	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Casing Material	PVC/#40	steel/	SS/#304	SS/#304	PVC/#40	SS/#304	PVC/#40	SS/#304	PVC/#40
Monitored Interval									
Top-Depth	26.0	105.0	134.0	148.3	132.0	126.0	6.5	5.5	144.0
Midpoint-Depth	28.6	119.4	139.5	157.5	138.5	135.0	12.0	12.0	150.0
Bottom-Depth	31.2	133.8	145.0	166.7	145.0	144.0	17.5	18.4	156.0
Top-Elevation	892.55	817.85	980.10	933.60	1023.50	975.40	999.50	925.61	958.30
Midpoint-Elevation	889.95	803.45	974.60	924.40	1017.00	966.40	994.00	919.16	952.30
Bottom-Elevation	887.35	789.05	969.10	915.20	1010.50	957.40	988.50	912.71	946.30
Screen Material	PVC/sl	.	SS/sw/.01	SS/sw/.01	PVC/sl	SS/sw/.01	PVC/sw/.01	SS/sw/.01	PVC/sw/.01
Screen Length	4.4	.	10	15.8	10	10.8	10	10.3	10
Open-Hole Length	.	28.8
Open-Hole Diameter	.	3.63

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Well Number Hydrogeologic Regime Location	GW-204 EF T0134	GW-205 CR UNCS	GW-207 EF EXP-SR	GW-208 EF EXP-SR	GW-217 CR LIV	GW-219 EF UOV	GW-220 EF NHP	GW-221 CR UNCS	GW-223 EF NHP
General Information									
Date Installed	08/30/89	10/25/85	09/25/85	05/14/86	08/13/87	07/30/87	08/22/85	10/24/85	08/21/85
Total Depth Drilled	17.5	164.0	109.6	412.8	180.0	11.3	45.2	158.0	90.5
East Coordinate	57,411	54,008	64,023	64,007	53,020	58,929	64,225	54,389	63,311
North Coordinate	29,956	28,363	31,596	31,612	28,758	29,163	28,949	28,359	28,938
Measuring Point Elevation	958.77	1,104.14	898.80	897.72	1,177.06	935.84	915.84	1,106.16	911.82
Surface Elevation	955.47	1,101.46	894.61	894.38	1,174.29	931.27	912.74	1,103.36	908.97
Hydrostratigraphic Unit	AQT	AQF	AQT	AQT	AQF	AQF	AQF	AQF	AQF
Geologic Formation	CC	OCK	Cr	Cr	OCK	Cmn	Cmn	OCK	Cmn
Aquifer Zone	WT	BDR	BDR	BDR	BDR	WT	BDR	BDR	BDR
Weathered Rock-Depth	10.0	100.0	.	.	55.0	.	.	36.0	.
Weathered Rock-Elevation	945.47	1001.50	.	.	1119.30	.	.	1067.40	.
Fresh Rock-Depth	.	146.0	.	12.0	75.0	.	11.0	90.0	10.0
Fresh Rock-Elevation	.	955.50	.	882.38	1099.30	.	901.74	1013.40	898.97
Conductor Casing									
Casing Depth	.	154.0	17.0	24.0	81.7	.	13.0	92.0	11.0
Casing Diameter	.	10.75	8.63	8.63	10.75	.	12.5	6.63	12.5
Casing Material	none	steel/F25	PVC/#40	PVC/#40	steel/F25	none	PVC/#40	steel/F25	PVC/#40
Well Casing									
Borehole Depth	17.5	164.0	100.0	404.0	180.0	11.3	45.2	158.0	90.5
Borehole Diameter	6	10	7.87	6.62	10	10	11	6	11
Casing Depth	7.3	154.0	100.0	404.0	166.8	5.7	34.7	148.0	80.0
Casing Diameter	4.5	4.5	4.38	4.38	4.5	4.5	4.5	4.5	4.5
Casing Material	SS/#304	PVC/#40	PVC/#40	steel/	SS/#304	SS/#304	PVC/#40	PVC/#40	PVC/#40
Monitored Interval									
Top-Depth	6.5	154.0	100.0	404.0	165.2	4.3	31.0	147.0	79.0
Midpoint-Depth	11.9	159.0	104.8	408.4	172.6	7.8	38.1	152.5	84.8
Bottom-Depth	17.3	164.0	109.6	412.8	180.0	11.3	45.2	158.0	90.5
Top-Elevation	948.97	947.50	794.61	490.38	1009.10	926.97	881.74	956.40	829.97
Midpoint-Elevation	943.57	942.50	789.81	485.98	1001.70	923.47	874.64	950.90	824.22
Bottom-Elevation	938.17	937.50	785.01	481.58	994.30	919.97	867.54	945.40	818.47
Screen Material	SS/sw./.01	PVC/sw./.01	.	.	SS/sw./.01	SS/sw./.01	PVC/sw./.01	PVC/sw./.01	PVC/sw./.01
Screen Length	10	10	.	.	10.6	5.6	10	10	10
Open-Hole Length	.	.	9.6	8.8
Open-Hole Diameter	.	.	3.88	3.63

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Well Number Hydrogeologic Regime Location	GW-225 BC OLF	GW-226 BC OLF	GW-230 EF EXP-UV	GW-231 CR KHQ	GW-232 EF EXP-UV	GW-240 EF NHP	GW-241 CR CRSDB	GW-251 EF S2	GW-253 EF S2
General Information									
Date Installed	10/08/85	10/14/85	05/12/86	10/02/85	03/27/86	10/31/85	01/30/86	04/08/86	04/11/86
Total Depth Drilled	200.0	55.0	406.4	35.0	411.7	29.5	103.0	51.0	50.0
East Coordinate	47,461	47,473	69,617	63,410	66,863	63,726	63,659	53,843	54,057
North Coordinate	29,155	29,156	28,388	24,725	28,546	28,604	27,069	29,467	29,404
Measuring Point Elevation	943.11	943.60	923.14	849.67	931.42	922.90	982.64	1,003.80	1,004.24
Surface Elevation	940.21	940.56	919.57	846.90	929.52	919.50	980.80	1,001.60	1,001.60
Hydrostratigraphic Unit	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF
Geologic Formation	Cmn	Cmn	Cmn	Ock	Cmn	Cmn	Ock	Cmn	Cmn
Aquifer Zone	BDR	BDR	BDR	BDR	BDR	BDR	WT	BDR	WT
Weathered Rock-Depth	.	.	19.0	.	.	.	67.0	.	.
Weathered Rock-Elevation	.	.	900.57	.	.	.	913.80	.	.
Fresh Rock-Depth	30.0	28.0	38.0	10.5	.	14.0	94.6	32.5	.
Fresh Rock-Elevation	910.21	912.56	881.57	836.40	.	905.50	886.20	969.10	.
Conductor Casing									
Casing Depth	32.0	30.0	31.0	11.0	33.0	14.0	.	.	.
Casing Diameter	10.75	10.75	8.63	10.63	8.63	12.5	.	.	.
Casing Material	steel/	steel/	steel/	PVC/#40	PVC/#40	PVC/#40	none	none	none
Well Casing									
Borehole Depth	150.0	45.0	341.0	35.0	401.0	29.5	103.0	51.0	50.0
Borehole Diameter	10	10	5.5	11	6.62	11	8.5	8.25	8.25
Casing Depth	150.0	45.0	341.0	24.5	401.0	24.0	79.0	37.5	37.0
Casing Diameter	4.5	4.5	4.38	4.5	4.38	4.5	4.5	4.5	4.5
Casing Material	steel/	steel/	steel/	PVC/#40	steel/	PVC/#40	SS/#304	PVC/#40	PVC/#40
Monitored Interval									
Top-Depth	150.0	45.0	341.0	22.8	401.0	21.0	78.0	35.0	36.2
Midpoint-Depth	175.0	50.0	373.7	28.9	406.4	25.3	90.5	43.0	43.1
Bottom-Depth	200.0	55.0	406.4	35.0	411.7	29.5	103.0	51.0	50.0
Top-Elevation	790.21	895.56	578.57	824.10	528.52	898.50	902.80	966.60	965.40
Midpoint-Elevation	765.21	890.56	545.87	818.00	523.17	894.25	890.30	958.60	958.50
Bottom-Elevation	740.21	885.56	513.17	811.90	517.82	890.00	877.80	950.60	951.60
Screen Material	.	.	.	PVC/sw.01	.	PVC/sw.01	SS/sw.01	PVC/sw.01	PVC/sw.01
Screen Length	.	.	.	10	.	5	21	9.6	9.6
Open-Hole Length	50	10	65.4	.	10.7
Open-Hole Diameter	4	4	3.63	.	3.88

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Well Number Hydrogeologic Regime Location	GW-276	GW-301	GW-302	GW-305	GW-311	GW-315	GW-339	GW-363	GW-364
	BC S3	CR CRBAWP	CR UNCS	CR LIV	BC RS	BC SPI	CR UNCS	BC EMWMF	BC OLF
General Information									
Date Installed	07/15/86	07/02/87	11/10/89	08/25/87	07/15/87	09/25/87	12/04/89	03/16/88	05/04/88
Total Depth Drilled	18.5	163.5	136.0	179.6	40.3	104.0	114.0	75.0	60.3
East Coordinate	52,557	61,964	54,353	52,962	50,126	52,268	54,147	46,872	46,508
North Coordinate	29,926	27,662	28,694	28,548	29,267	29,455	28,659	29,961	29,152
Measuring Point Elevation	1,001.57	1,086.55	1,141.84	1,183.75	999.65	1,047.48	1,124.83	958.71	935.95
Surface Elevation	998.70	1,083.94	1,139.59	1,181.07	996.43	1,044.84	1,122.18	955.41	933.39
Hydrostratigraphic Unit	AQT	AQF	AQF	AQF	AQF	AQF	AQF	AQT	AQF
Geologic Formation	Cn	Ock	Ock	Ock	Cmn	Cmn	Ock	Cn	Cmn
Aquifer Zone	WT	BDR	BDR	BDR	WT	BDR	BDR	BDR	BDR
Weathered Rock-Depth	18.5	94.0	63.0	53.0	40.3	54.0	45.0	9.0	22.0
Weathered Rock-Elevation	980.30	989.90	1076.60	1128.10	956.13	990.80	1077.20	946.41	911.39
Fresh Rock-Depth	.	136.0	102.0	84.0	.	71.0	91.0	21.0	30.0
Fresh Rock-Elevation	.	947.90	1037.60	1097.10	.	973.80	1031.20	934.41	903.39
Conductor Casing									
Casing Depth	.	105.0	63.8	64.0	.	84.4	91.0	36.0	30.0
Casing Diameter	.	10.75	10.75	10.75	.	10.75	10.75	10.75	11
Casing Material	none	steel/F25	steel	steel/F25	none	steel/F25	steel	unknown	unknown
Well Casing									
Borehole Depth	18.5	163.5	136.0	179.6	40.3	104.0	114.0	50.0	60.3
Borehole Diameter	8	10	9.5	10	10	10	9.5	9.5	10.6
Casing Depth	13.0	151.0	124.5	168.9	29.7	93.3	103.7	50.0	49.8
Casing Diameter	4.5	4.5	4.5	4.5	4.5	4.5	4.5	6.62	4.5
Casing Material	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	steel/F25	SS/#304
Monitored Interval									
Top-Depth	11.3	148.5	121.5	165.3	25.6	90.0	101.0	50.0	47.0
Midpoint-Depth	14.9	156.0	128.2	172.5	33.0	97.0	107.5	62.5	53.7
Bottom-Depth	18.5	163.5	134.8	179.6	40.3	104.0	114.0	75.0	60.3
Top-Elevation	987.50	935.40	1018.10	1015.80	970.83	954.80	1021.20	905.41	886.39
Midpoint-Elevation	983.90	927.90	1011.45	1008.65	963.48	947.80	1014.70	892.91	879.74
Bottom-Elevation	980.30	920.40	1004.80	1001.50	956.13	940.80	1008.20	880.41	873.09
Screen Material	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	.	SS/sw/.01
Screen Length	5.3	10	10.3	10.7	10.6	10	10.3	.	10
Open-Hole Length	.	.	.	.	.	.	.	25	.
Open-Hole Diameter	.	.	.	.	.	.	.	6	.

APPENDIX C: MONITORING WELL CONSTRUCTION DETAILS, 2001

Well Number Hydrogeologic Regime Location	GW-365	GW-381	GW-382	GW-383	GW-514	GW-521	GW-522	GW-526	GW-537
	BC OLF	EF NHP	EF NHP	EF NHP	CR FCAP	CR LIV	CR LIV	BC S3	BC OLF
General Information									
Date Installed	05/02/88	04/25/88	04/11/88	04/04/88	03/24/88	09/14/88	09/20/88	06/13/88	09/14/88
Total Depth Drilled	150.0	60.4	173.0	24.1	195.0	136.0	195.5	123.0	24.5
East Coordinate	46,490	62,947	62,956	63,522	57,341	52,040	52,612	50,708	49,539
North Coordinate	29,150	28,715	28,716	29,201	27,575	28,541	28,377	30,033	30,057
Measuring Point Elevation	935.58	913.36	913.17	908.77	1,001.22	1,182.88	1,175.49	998.25	976.44
Surface Elevation	933.03	913.44	913.16	906.00	998.66	1,179.46	1,172.04	995.34	974.19
Hydrostratigraphic Unit	AQF	AQF	AQF	AQT	AQF	AQF	AQF	AQT	AQT
Geologic Formation	Cmn	Cmn	Cmn	Cn	OCK	OCK	OCK	Cn	Cn
Aquifer Zone	BDR	BDR	BDR	WT	BDR	BDR	BDR	BDR	WT
Weathered Rock-Depth	11.0	13.5	12.7	11.5	44.0	.	85.0	3.5	14.9
Weathered Rock-Elevation	922.03	899.90	900.46	894.50	954.66	.	1087.00	991.84	959.29
Fresh Rock-Depth	15.0	26.0	17.0	.	92.0	54.0	130.0	23.6	.
Fresh Rock-Elevation	918.03	887.40	896.16	.	906.66	1125.50	1042.00	971.74	.
Conductor Casing									
Casing Depth	18.5	13.5	12.7	5.0	105.0	60.5	90.0	23.6	.
Casing Diameter	11.75	13	10.75	10.75	10.75	10.75	10.75	10.75	.
Casing Material	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	none
Well Casing									
Borehole Depth	126.7	49.3	125.0	24.1	174.0	136.0	195.5	101.0	24.5
Borehole Diameter	10.75	9.5	9.5	8.75	9.5	9.5	9.5	9.5	8.75
Casing Depth	126.7	49.3	125.0	18.1	174.0	124.9	184.6	101.0	8.0
Casing Diameter	6.62	6.62	6.62	4.5	6.62	4.5	4.5	6.62	4.5
Casing Material	steel/F25	steel/F25	steel/F25	SS/#304	steel/F25	SS/#304	SS/#304	steel/F25	SS/#304
Monitored Interval									
Top-Depth	126.7	49.3	125.0	16.6	174.0	123.2	183.0	101.0	4.8
Midpoint-Depth	138.4	54.9	149.0	20.1	184.5	129.6	189.2	112.0	14.1
Bottom-Depth	150.0	60.4	173.0	23.6	195.0	136.0	195.3	123.0	23.3
Top-Elevation	806.33	864.10	788.16	889.40	824.66	1056.30	989.00	894.34	969.39
Midpoint-Elevation	794.68	858.55	764.16	885.90	814.16	1049.90	982.85	883.34	960.14
Bottom-Elevation	783.03	853.00	740.16	882.40	803.66	1043.50	976.70	872.34	950.89
Screen Material	.	.	.	SS/sw/.01	.	SS/sw/.01	SS/sw/.01	.	SS/sw/.01
Screen Length	.	.	.	5	.	10.3	10.4	.	15
Open-Hole Length	23.3	11.1	48	.	21	.	.	22	.
Open-Hole Diameter	6	6.1	6.13	.	6	.	.	6.1	.

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Well Number Hydrogeologic Regime Location	GW-539 CR LII	GW-540 CR LII	GW-542 CR CDLVVI	GW-543 CR CDLVVI	GW-544 CR CDLVVI	GW-557 CR LV	GW-560 CR CDLVII	GW-562 CR CDLVII	GW-564 CR CDLVII
General Information									
Date Installed	05/11/89	06/02/89	05/18/89	06/02/89	05/30/89	12/02/88	12/30/88	01/13/89	01/27/89
Total Depth Drilled	156.0	171.5	77.5	94.0	110.0	139.0	117.0	133.0	88.0
East Coordinate	52,278	52,371	51,642	51,458	51,820	59,520	60,743	61,640	59,865
North Coordinate	27,193	27,489	27,466	27,072	26,963	26,450	25,692	26,276	25,873
Measuring Point Elevation	1,093.22	1,072.32	1,051.77	1,023.98	1,045.20	1,081.36	949.05	934.69	937.97
Surface Elevation	1,090.39	1,069.38	1,049.03	1,021.19	1,042.53	1,078.63	945.76	931.86	935.12
Hydrostratigraphic Unit	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF
Geologic Formation	OCK	OCK	OCK	OCK	OCK	OCK	OCK	OCK	OCK
Aquifer Zone	BDR	BDR	WT	BDR	BDR	WT	WT	WT	WT
Weathered Rock-Depth	.	110.0	.	16.0	47.0	.	.	.	.
Weathered Rock-Elevation	.	959.40	.	1005.20	995.50	.	.	.	.
Fresh Rock-Depth	74.0	150.0	.	37.0	52.5	.	.	52.0	72.0
Fresh Rock-Elevation	1016.40	919.40	.	984.20	990.00	.	.	879.86	863.12
Conductor Casing									
Casing Depth	79.0	154.0	.	29.3	54.5	85.0	.	.	.
Casing Diameter	10.75	10.75	.	10.75	10.75	10.75	.	.	.
Casing Material	steel	steel	none	steel	steel	steel	none	none	none
Well Casing									
Borehole Depth	156.0	171.5	76.5	93.6	109.3	138.0	117.0	60.0	81.0
Borehole Diameter	9.25	9.25	9.25	9.25	9.25	9.5	9.5	9.5	9.5
Casing Depth	139.8	161.2	60.8	78.0	93.4	115.8	49.0	38.0	55.3
Casing Diameter	4.5	4.5	4.5	4.5	4.5	4	4	4	4
Casing Material	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304
Monitored Interval									
Top-Depth	136.4	158.5	59.0	76.2	91.0	112.9	45.2	36.0	52.0
Midpoint-Depth	146.2	165.0	67.8	84.9	100.2	125.5	57.1	48.0	66.5
Bottom-Depth	156.0	171.5	76.5	93.6	109.3	138.0	69.0	60.0	81.0
Top-Elevation	954.00	910.90	990.00	945.00	951.50	965.70	890.97	895.86	883.12
Midpoint-Elevation	944.20	904.40	981.25	936.30	942.35	953.15	879.07	883.86	868.62
Bottom-Elevation	934.40	897.90	972.50	927.60	933.20	940.60	867.17	871.86	854.12
Screen Material	SS/sl/.01	SS/sl/.01	SS/sl/.01	SS/sl/.01	SS/sl/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01
Screen Length	15.9	10.3	15.7	15.6	15.9	20	20	20	20
Open-Hole Length
Open-Hole Diameter

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Well Number Hydrogeologic Regime Location	GW-605 EF EXP-I	GW-606 EF EXP-I	GW-608 CR CRSP	GW-609 CR CRSP	GW-612 CR CRSP	GW-616 BC S3	GW-618 EF EXP-E	GW-620 EF FTF	GW-627 BC BG
General Information									
Date Installed	03/19/91	03/20/91	10/05/89	10/18/90	11/01/89	03/10/90	03/15/90	03/27/90	12/11/89
Total Depth Drilled	40.5	175.0	220.0	269.0	254.0	269.0	37.0	75.0	270.0
East Coordinate	62,002	61,951	59,724	60,040	58,504	51,907	54,738	52,895	42,774
North Coordinate	28,707	28,708	27,889	28,109	28,371	29,724	29,798	29,565	29,505
Measuring Point Elevation	919.06	919.59	1,074.75	1,112.31	1,131.03	1,011.81	985.14	1,015.54	943.65
Surface Elevation	916.97	916.98	1,071.00	1,109.70	1,128.65	1,009.81	982.64	1,012.84	940.39
Hydrostratigraphic Unit	AQF	AQF	AQF	AQF	AQT	AQF	AQF	AQF	AQT
Geologic Formation	Cmn	Cmn	OCK	OCK	Cn	Cmn	Cmn	Cn	Cn
Aquifer Zone	BDR	BDR	BDR	BDR	BDR	WT	WT	BDR	
Weathered Rock-Depth	.	.	113.0	.	78.0	35.0	27.0	41.0	3.0
Weathered Rock-Elevation	.	.	958.00	.	1050.70	974.80	955.64	971.80	937.39
Fresh Rock-Depth	9.5	10.8	140.0	107.0	125.0	42.0	.	70.0	43.0
Fresh Rock-Elevation	907.47	906.18	931.00	1002.70	1003.70	967.80	.	942.80	897.39
Conductor Casing									
Casing Depth	9.5	10.8	.	107.0	136.9	45.6	27.5	42.5	47.5
Casing Diameter	11.75	16	10.75	10.75	11.75	11.75	10.75	10.75	11.75
Casing Material	steel/J-55	steel/J-55	steel	steel/J-55	steel/J-55	steel/J-55	steel/J-55	steel/J-55	steel/J-55
Well Casing									
Borehole Depth	40.5	175.0	150.0	269.0	235.0	219.7	37.0	75.0	254.0
Borehole Diameter	10.6	9.63	15.5	9.5	10.63	10.63	9.5	9.5	10.63
Casing Depth	29.7	161.0	148.0	258.7	230.6	219.1	26.7	64.2	254.0
Casing Diameter	4.25	4.25	10.75	4.5	7	7	4.5	4.5	7
Casing Material	SS/#304	SS/#304	steel/J-55	SS/#304	steel/F25	steel/F25	SS/#304	SS/#304	steel/F25
Monitored Interval									
Top-Depth	28.2	155.0	148.0	256.4	235.0	219.0	26.0	61.7	254.0
Midpoint-Depth	34.1	163.0	184.0	262.7	244.5	244.0	31.5	68.4	262.0
Bottom-Depth	39.9	171.0	220.0	269.0	254.0	269.0	37.0	75.0	270.0
Top-Elevation	888.77	761.98	923.00	853.30	893.70	790.80	956.64	951.10	686.39
Midpoint-Elevation	882.92	753.98	887.00	847.00	884.20	765.80	951.14	944.45	678.39
Bottom-Elevation	877.07	745.98	851.00	840.70	874.70	740.80	945.64	937.80	670.39
Screen Material	SS/sw/.01	SS/pp/.01	.	SS/sw/.01	.	.	SS/sw/.01	SS/sw/.01	.
Screen Length	10	10	.	10.3	.	.	10.3	10.8	.
Open-Hole Length	.	.	72	.	19	50	.	.	16
Open-Hole Diameter	.	.	9.5	.	6.25	6.25	.	.	6.25

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Well Number Hydrogeologic Regime Location	GW-639 BC EMWMF	GW-653 BC BG	GW-656 EF T0134	GW-683 BC EXP-A	GW-684 BC EXP-A	GW-685 BC EXP-A	GW-695 BC EXP-B	GW-698 EF CPT	GW-703 BC EXP-B
General Information									
Date Installed	06/15/90	08/10/90	07/19/90	12/03/90	10/09/90	11/12/90	02/21/91	11/02/90	12/07/90
Total Depth Drilled	125.5	39.0	21.5	197.5	129.6	138.3	62.6	75.0	182.0
East Coordinate	45,260	42,317	57,439	41,552	41,354	41,448	44,868	56,804	44,931
North Coordinate	29,626	29,660	29,895	28,282	28,525	28,667	28,845	29,277	28,806
Measuring Point Elevation	940.70	931.80	954.79	972.26	898.86	892.31	939.57	970.29	955.49
Surface Elevation	937.98	928.85	954.90	969.45	895.53	889.28	937.22	970.09	951.80
Hydrostratigraphic Unit	AQT	AQT	AQT	AQF	AQF	AQF	AQF	AQF	AQF
Geologic Formation	Cn	Cn	Cn	Ock	Cmn	Cmn	Ock	Cmn	Cmn
Aquifer Zone	BDR	WT	WT	BDR	BDR	BDR	BDR	BDR	BDR
Weathered Rock-Depth	3.0	3.5	12.0	22.0	.	5.0	6.0	42.0	7.0
Weathered Rock-Elevation	934.98	925.35	942.90	947.45	.	884.28	931.22	928.09	944.80
Fresh Rock-Depth	20.0	.	.	26.0	9.0	15.5	18.0	.	10.0
Fresh Rock-Elevation	917.98	.	.	943.45	886.53	873.78	919.22	.	941.80
Conductor Casing									
Casing Depth	31.0	.	.	82.0	87.0	.	22.5	42.0	.
Casing Diameter	11.75	.	.	11.75	11.75	.	11.75	10.5	.
Casing Material	steel/J-55	none	none	steel/J-55	steel/J-55	none	steel/J-55	PVC/#40	none
Well Casing									
Borehole Depth	95.5	39.0	21.5	197.5	129.6	88.5	62.6	75.0	135.0
Borehole Diameter	10	9.5	9.5	10.63	10.5	10.63	9.88	8.5	10.63
Casing Depth	95.5	29.0	10.7	146.0	113.8	88.3	52.4	65.0	133.8
Casing Diameter	7	4.5	4.5	4.5	4.5	7	4.5	4.5	7
Casing Material	steel/F25	SS/#304	SS/#304	SS/#304	SS/#304	steel/F25	SS/#304	SS/#304	steel/F25
Monitored Interval									
Top-Depth	95.5	26.3	8.3	133.9	106.4	88.5	50.6	63.0	135.0
Midpoint-Depth	110.5	32.7	14.9	165.4	117.4	113.4	56.6	69.0	158.5
Bottom-Depth	125.5	39.0	21.5	196.8	128.4	138.3	62.6	75.0	182.0
Top-Elevation	842.48	902.55	946.60	835.55	789.13	800.78	886.62	907.09	816.80
Midpoint-Elevation	827.48	896.20	940.00	804.10	778.13	775.88	880.62	901.09	793.30
Bottom-Elevation	812.48	889.85	933.40	772.65	767.13	750.98	874.62	895.09	769.80
Screen Material	.	SS/sw/.01	SS/sw/.01	SS/pp/.01	SS/pp/.01	.	SS/sw/.01	SS/sw/.01	.
Screen Length	.	10	10	50.8	14.6	.	10	10	.
Open-Hole Length	30	49.8	.	.	47
Open-Hole Diameter	6.25	6.63	.	.	6.25

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Well Number Hydrogeologic Regime Location	GW-704 BC EXP-B	GW-706 BC EXP-B	GW-709 CR LII	GW-712 BC EXP-W	GW-713 BC EXP-W	GW-714 BC EXP-W	GW-715 BC EXP-W	GW-722 EF NHP	GW-724 BC EXP-C
General Information									
Date Installed	12/20/90	01/27/91	04/05/91	06/20/91	01/13/92	01/24/92	01/29/92	08/09/91	08/12/91
Total Depth Drilled	256.0	182.5	80.6	457.5	315.2	145.0	44.6	644.3	301.6
East Coordinate	44,935	44,944	52,372	36,507	36,434	36,435	36,453	64,926	48,995
North Coordinate	28,845	28,946	25,344	28,233	28,236	28,422	28,425	28,532	29,198
Measuring Point Elevation	945.53	929.47	906.78	877.89	881.43	875.88	874.92	953.71	979.27
Surface Elevation	941.99	925.78	903.84	873.61	877.83	872.30	872.17	951.04	976.62
Hydrostratigraphic Unit	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF	AQF
Geologic Formation	Cmn	Cmn	OCK	OCK	Cmn	Cmn	Cmn	Cmn	Cmn
Aquifer Zone	BDR	BDR	BDR	BDR	BDR	BDR	WT	BDR	BDR
Weathered Rock-Depth	16.0	17.0	39.0	12.0	26.8	27.0	34.0	54.0	33.5
Weathered Rock-Elevation	925.99	908.78	864.84	861.61	851.03	845.30	838.17	897.04	943.12
Fresh Rock-Depth	23.0	27.0	43.0	66.0	63.8	35.0	.	73.0	40.0
Fresh Rock-Elevation	918.99	898.78	860.84	807.61	814.03	837.30	.	878.04	936.62
Conductor Casing									
Casing Depth	21.0	40.3	50.0	44.8	50.0	40.5	.	56.2	40.0
Casing Diameter	11.75	11.75	11.75	11.75	11.75	11.75	.	10.75	11.75
Casing Material	steel/J-55	steel/J-55	steel/J-55	steel/J-55	steel/J-55	steel/J-55	none	steel/J-55	steel/J-55
Well Casing									
Borehole Depth	246.0	157.0	80.6	441.5	305.0	115.1	44.6	75.0	289.6
Borehole Diameter	10.63	10.6	10.6	10.6	10.6	10.6	10.6	6	10.6
Casing Depth	244.5	156.1	70.4	440.2	305.0	115.1	33.1	75.0	289.6
Casing Diameter	7	7	4.25	7	7	7	4.25	4.5	7
Casing Material	steel/F25	steel/F25	SS/#304	steel/F25	steel/F25	steel/F25	SS/#304	steel/J-55	steel/F25
Monitored Interval									
Top-Depth	246.0	157.0	68.7	441.5	305.0	115.1	32.0	75.0	289.6
Midpoint-Depth	251.0	169.8	74.7	449.5	310.1	130.1	38.0	359.7	295.6
Bottom-Depth	256.0	182.5	80.6	457.5	315.2	145.0	44.0	644.3	301.6
Top-Elevation	695.99	768.78	835.14	432.11	572.83	757.20	840.17	876.04	687.02
Midpoint-Elevation	690.99	756.03	829.19	424.11	567.73	742.25	834.17	591.39	681.02
Bottom-Elevation	685.99	743.28	823.24	416.11	562.63	727.30	828.17	306.74	675.02
Screen Material	.	.	SS/sw/.01	.	.	.	SS/sw/.01	.	.
Screen Length	.	.	10	.	.	.	10	.	.
Open-Hole Length	10	25.5	.	16	10.2	29.9	.	569.3	12
Open-Hole Diameter	6.5	6.25	.	6.25	6.25	6.25	.	3.5	6.25

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Well Number Hydrogeologic Regime Location	GW-725 BC EXP-C	GW-731 CR CRSDB	GW-732 CR CRSDB	GW-733 EF EXP-J	GW-735 EF EXP-J	GW-738 BC EXP-C	GW-740 BC EXP-C	GW-744 EF GRIDK1	GW-747 EF GRIDK2
General Information									
Date Installed	08/27/91	09/12/91	09/11/91	10/02/91	10/30/91	11/21/91	12/20/91	01/08/92	01/28/92
Total Depth Drilled	142.5	180.4	190.6	256.5	83.0	90.1	190.0	69.5	79.9
East Coordinate	48,989	63,863	64,268	65,057	64,872	49,026	49,055	64,324	64,570
North Coordinate	29,405	27,464	27,717	28,447	28,867	29,150	29,027	30,282	29,730
Measuring Point Elevation	961.05	1,049.38	1,064.29	959.84	924.46	983.08	1,020.43	907.62	921.13
Surface Elevation	958.26	1,045.75	1,060.65	955.69	921.34	980.36	1,016.95	905.05	918.33
Hydrostratigraphic Unit	AQF	AQF	AQF	AQF	AQT	AQF	AQF	AQT	AQT
Geologic Formation	Cmn	Ock	Ock	Cmn	Cn	Cmn	Cmn	Cpv	Cm
Aquifer Zone	BDR	BDR	BDR	BDR	WT	BDR	BDR	BDR	BDR
Weathered Rock-Depth	14.0	95.4	85.0	42.5	19.0	12.0	38.1	9.6	10.5
Weathered Rock-Elevation	944.26	950.40	975.70	913.19	902.34	968.36	978.90	895.45	907.83
Fresh Rock-Depth	17.5	129.4	96.0	47.1	77.5	15.1	45.1	14.6	12.0
Fresh Rock-Elevation	940.76	916.40	964.70	908.59	843.84	965.26	971.90	890.45	906.33
Conductor Casing									
Casing Depth	21.0	122.0	100.7	51.8	25.5	16.5	46.9	27.6	23.8
Casing Diameter	11.75	11.75	11.75	11.75	11.75	11.75	11.75	10.75	10.75
Casing Material	steel/J-55	steel/J-55	steel/J-55	Steel/J-55	Steel/J-55	steel/J-55	steel/J-55	steel/J-55	steel/J-55
Well Casing									
Borehole Depth	132.5	175.4	189.5	240.1	83.0	90.1	165.6	69.5	79.9
Borehole Diameter	10.6	10.6	10.6	10.6	10.6	10.6	10.6	9.87	9.87
Casing Depth	132.5	165.2	179.3	240.1	67.9	67.3	165.6	57.0	69.2
Casing Diameter	7	4.5	4.5	7	4.5	4.5	7	4.5	4.5
Casing Material	steel/F25	SS/#304	SS/#304	Steel/F25	SS/#304	SS/#304	steel/F25	SS/#304	SS/#304
Monitored Interval									
Top-Depth	132.5	164.0	178.3	240.1	67.5	63.5	165.6	55.0	67.4
Midpoint-Depth	137.5	171.4	184.2	248.3	73.4	75.8	177.8	62.3	73.5
Bottom-Depth	142.5	178.7	190.0	256.5	79.2	88.0	190.0	69.5	79.6
Top-Elevation	825.76	881.80	882.40	715.59	853.84	916.86	851.40	850.05	850.93
Midpoint-Elevation	820.76	874.45	876.55	707.39	847.99	904.61	839.20	842.80	844.83
Bottom-Elevation	815.76	867.10	870.70	699.19	842.14	892.36	827.00	835.55	838.73
Screen Material	.	SS/sw/.01	SS/sw/.01	.	SS/sw/.01	SS/sw/.01	.	SS/sw/.01	SS/sw/.01
Screen Length	.	10	10	.	10.2	20.2	.	10	9.9
Open-Hole Length	10	.	.	16.4	.	.	24.4	.	.
Open-Hole Diameter	6.25	.	.	6.25	.	.	6.25	.	.

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Well Number Hydrogeologic Regime Location	GW-750 EF EXP-J	GW-757 CR LII	GW-762 EF GRIDJ3	GW-763 EF GRIDJ3	GW-769 EF GRIDG3	GW-770 EF GRIDG3	GW-771 EF GRIDC1	GW-772 EF GRIDC1	GW-782 EF GRIDE3
General Information									
Date Installed	02/06/92	04/24/92	05/15/92	05/13/92	06/04/92	06/04/92	06/12/92	06/16/92	08/12/92
Total Depth Drilled	72.8	166.5	60.2	17.0	61.4	20.0	58.8	19.0	36.0
East Coordinate	64,835	53,303	63,193	63,220	60,230	60,255	56,361	56,357	58,099
North Coordinate	28,975	25,410	29,115	29,117	29,510	29,505	31,331	31,310	29,719
Measuring Point Elevation	919.03	961.61	915.34	915.05	944.44	944.71	1,011.20	1,012.66	947.76
Surface Elevation	915.96	958.65	911.85	911.38	941.53	941.67	1,008.27	1,009.60	944.48
Hydrostratigraphic Unit	AQT	AQF	AQT	AQT	AQT	AQT	AQT	AQT	AQT
Geologic Formation	Cn	Ock	Cn	Cn	Cn	Cn	Crg	Crt	Cn
Aquifer Zone	BDR	BDR	BDR	WT	BDR	WT	BDR	WT	BDR
Weathered Rock-Depth	18.5	29.5	12.0	17.0	14.2	12.0	17.4	19.0	1.0
Weathered Rock-Elevation	897.46	929.15	899.85	894.38	927.33	929.67	990.90	990.60	943.48
Fresh Rock-Depth	24.8	48.0	14.5	-	-	16.5	21.9	-	7.5
Fresh Rock-Elevation	891.16	910.65	897.35	-	-	925.17	986.40	-	936.98
Conductor Casing									
Casing Depth	21.7	46.8	11.5	-	14.2	-	25.1	-	-
Casing Diameter	11.75	10.75	16.75	-	16.75	-	10.75	-	-
Casing Material	steel J-55	steel/J-55	steel/J-55	none	steel/J-55	none	steel/J-55	none	none
Well Casing									
Borehole Depth	72.8	166.5	60.2	17.0	61.4	20.0	58.8	19.0	36.0
Borehole Diameter	10.6	9.62	9.87	8	10.62	10.62	9.87	8	9.87
Casing Depth	62.4	135.5	48.2	5.2	49.4	8.5	44.0	5.1	25.0
Casing Diameter	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Casing Material	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304
Monitored Interval									
Top-Depth	61.2	134.0	46.4	4.0	48.2	7.5	42.2	3.8	23.8
Midpoint-Depth	67.0	150.4	52.6	10.0	54.3	13.3	48.3	10.4	29.9
Bottom-Depth	72.7	166.7	58.7	16.0	60.3	19.0	54.4	17.0	35.9
Top-Elevation	854.76	824.65	865.45	907.38	893.33	934.17	966.10	1005.80	920.68
Midpoint-Elevation	849.01	808.30	859.30	901.38	887.28	928.42	960.00	999.20	914.63
Bottom-Elevation	843.26	791.95	853.15	895.38	881.23	922.67	953.90	992.60	908.58
Screen Material	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01
Screen Length	10	30	10	10.25	10	10	14.8	10.1	10
Open-Hole Length	-	-	-	-	-	-	-	-	-
Open-Hole Diameter	-	-	-	-	-	-	-	-	-

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Well Number Hydrogeologic Regime Location	GW-784 EF GRIDD1	GW-785 EF GRIDD1	GW-789 EF GRIDF3	GW-791 EF GRIDD2	GW-796 CR LV	GW-797 CR LV	GW-798 CR CDLVII	GW-799 CR LV	GW-801 CR LV
General Information									
Date Installed	08/18/92	08/18/92	09/10/92	09/21/92	03/04/93	03/16/93	03/18/93	03/25/93	07/01/93
Total Depth Drilled	64.3	25.5	23.8	70.6	139.7	134.1	135.5	92.0	188.9
East Coordinate	57,037	57,050	59,045	57,423	58,206	58,550	60,310	59,961	58,780
North Coordinate	31,252	31,247	29,645	30,483	27,924	27,447	27,265	26,746	26,808
Measuring Point Elevation	1,009.27	1,009.43	937.48	992.16	1,052.62	1,060.00	1,006.00	981.29	1,097.16
Surface Elevation	1,005.81	1,005.87	934.37	988.51	1,048.80	1,056.10	1,002.42	978.10	1,093.82
Hydrostratigraphic Unit	AQT	AQT	AQT	AQT	AQF	AQF	AQF	AQF	AQF
Geologic Formation	Crg	Cm	Cn	Cm	OCK	OCK	OCK	OCK	OCK
Aquifer Zone	BDR	WT	BDR	BDR	BDR	BDR	BDR	BDR	BDR
Weathered Rock-Depth	3.0	8.5	.	14.7	102.0	67.1	94.4	60.8	112.5
Weathered Rock-Elevation	1002.80	997.40	.	973.81	946.80	989.00	908.02	917.30	981.32
Fresh Rock-Depth	27.0	25.5	10.0	26.0	103.0	89.0	95.8	62.8	113.4
Fresh Rock-Elevation	978.80	980.40	924.37	962.51	945.80	967.10	906.62	915.30	980.42
Conductor Casing									
Casing Depth	26.9	.	.	31.5	107.6	95.0	99.7	65.0	115.4
Casing Diameter	11.75	.	.	10.75	10.75	10.75	10.75	10.75	10.75
Casing Material	steel/J-55	none	none	steel/J-55	steel/J-55	steel/J-55	steel/J-55	steel/J-55	steel/J55
Well Casing									
Borehole Depth	64.3	25.5	23.8	70.6	139.7	134.1	135.5	92.0	188.9
Borehole Diameter	9.87	8	9.87	9.87	9.5	9.5	9.5	9.5	9.87
Casing Depth	53.2	13.3	12.2	59.0	126.5	123.5	124.5	81.0	178.1
Casing Diameter	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Casing Material	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304
Monitored Interval									
Top-Depth	52.0	11.5	10.7	57.5	122.9	118.0	122.0	78.7	175.8
Midpoint-Depth	57.7	18.5	17.3	64.1	129.7	126.1	128.7	85.4	182.4
Bottom-Depth	63.4	25.4	23.8	70.6	136.5	134.1	135.4	92.0	188.9
Top-Elevation	953.80	994.40	923.67	931.01	925.90	938.10	880.42	899.40	918.02
Midpoint-Elevation	948.10	987.45	917.12	924.46	919.10	930.05	873.72	892.75	911.47
Bottom-Elevation	942.40	980.50	910.57	917.91	912.30	922.00	867.02	886.10	904.92
Screen Material	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01
Screen Length	10	10	10.5	10	10	10	10	10	10
Open-Hole Length	.	.	.	.	.	.	.	.	.
Open-Hole Diameter	.	.	.	.	.	.	.	.	.

APPENDIX C: MONITORING WELL CONSTRUCTION DETAILS, 2001

Well Number Hydrogeologic Regime Location	GW-816 EF EXP-SR	GW-827 CR CDLVI	GW-829 BC OLF	GW-831 CR FCAP	GW-832 EF NHP	GW-835 BC S3	GW-916 BC EMWMF	GW-917 BC EMWMF	GW-918 BC EMWMF
General Information									
Date Installed	06/02/94	01/24/95	03/17/95	07/30/96	05/09/96		01/29/01	01/22/01	02/02/01
Total Depth Drilled	16.1	135.0	115.0	200.0	11.9	19.2	36.0	51.0	75.0
East Coordinate	64,031	51,826	50,036	56,593	64,134	51,358	48,276	47,914	47,549
North Coordinate	31,582	27,721	29,953	26,654	29,142	29,822	31,186	30,463	31,672
Measuring Point Elevation	898.41	1,051.58	985.98	1,091.29	906.18	1,000.91	1,002.85	997.10	1,067.96
Surface Elevation	894.56	1,048.13	981.92	1,088.04	906.83	998.04			
Hydrostratigraphic Unit	AQT	AQF	AQT	AQF	AQF	AQF	AQT	AQT	AQT
Geologic Formation	Cr	Ock	Cn	Ock	Cmn	Cmn	CC	CC	CC
Aquifer Zone	WT	BDR	BDR	BDR	WT	WT	WT	WT	WT
Weathered Rock-Depth			1.3	134.8			10.0	21.0	
Weathered Rock-Elevation			980.62	953.24					
Fresh Rock-Depth		40.5	29.0	140.8			15.0	27.0	30.0
Fresh Rock-Elevation		1007.63	952.92	947.24					
Conductor Casing									
Casing Depth		43.4		138.3					
Casing Diameter		10.75		10.75					
Casing Material	none	Steel	none	Steel	none	none	none	none	none
Well Casing									
Borehole Depth	15.8	135.0	115.0	200.0	11.9		36.0	51.0	75.0
Borehole Diameter	10	9.87	9.87	9.87	12		6	6.5	6.5
Casing Depth	4.2	124.1	104.7	183.2	5.9	17.2	15.0	20.0	20.0
Casing Diameter	4.5	4.5	4.5	4.5	6.63	4.5	2.375	2.375	2.375
Casing Material	SS/#304	SS/#304	SS/#304	SS/#304	PVC/#40	PVC	SS/#304	SS/#304	SS/#304
Monitored Interval									
Top-Depth	2.9	122.1	102.9	182.0	4.0		13.0	18.0	18.0
Midpoint-Depth	9.4	128.5	108.8	190.8	7.9		24.5	34.5	25.5
Bottom-Depth	15.8	134.8	114.6	199.6	11.8		36.0	51.0	33.0
Top-Elevation	891.66	926.03	879.02	906.04	902.83				
Midpoint-Elevation	885.21	919.68	873.17	897.24	898.93				
Bottom-Elevation	878.76	913.33	867.32	888.44	895.03				
Screen Material	SS/sw/.01	SS/sw/.01	SS/sw/.01	SS/sw/.01	PVC/sl/.01	PVC/sl	SS/sw/.01	SS/sw/.01	SS/sw/.01
Screen Length	9.4	10	9.9	10.4	5		20	30	10
Open-Hole Length									
Open-Hole Diameter									

APPENDIX C: MONITORING WELL CONSTRUCTION DETAILS, 2001

Well Number Hydrogeologic Regime Location	GW-919 BC EMWMF	GW-920 BC EMWMF	GW-921 BC EMWMF	GW-922 BC EMWMF	GW-923 BC EMWMF	GW-924 BC EMWMF	GW-925 BC EMWMF	GW-926 BC EMWMF	GW-927 BC EMWMF
General Information									
Date Installed	01/16/01	01/31/01	01/17/01	02/01/01	01/29/01	02/05/01	02/01/01	02/01/01	02/01/01
Total Depth Drilled	55.0	50.0	46.0	102.0	54.0	170.0	145.0	172.0	
East Coordinate	47,326	47,375	47,139	47,147	48,184	46,300	47,128	46,290	47,906
North Coordinate	30,739	30,193	30,350	30,024	30,822	30,185	30,349	30,185	30,463
Measuring Point Elevation	990.52	967.43	971.29	956.91	1,016.73	968.90	971.14	968.94	997.19
Surface Elevation									
Hydrostratigraphic Unit	AQT	AQT	AQT	AQT	AQT	AQT	AQT	AQT	AQT
Geologic Formation	CC	CC	CC	CC	CC	CC	CC	CC	CC
Aquifer Zone	BDR	BDR	BDR	WT	WT	BDR	BDR	BDR	BDR
Weathered Rock-Depth				10.0		21.8		15.0	25.0
Weathered Rock-Elevation									
Fresh Rock-Depth	12.0	13.0	13.0	62.0	22.0	15.0	18.0	30.0	
Fresh Rock-Elevation									
Conductor Casing									
Casing Depth							62.0	56.0	50.0
Casing Diameter							6.6	6.6	6.6
Casing Material	none	none	none	none	none	none	Steel	Steel	Steel
Well Casing									
Borehole Depth	55.0	50.0	46.0	102.0	54.0	170.0	145.0	172.0	
Borehole Diameter	7.6	6.5	6.5	6	6.5	6.5	6.5	6.5	6
Casing Depth	24.0	18.0	25.0	40.0	23.0	97.0	113.0	60.0	
Casing Diameter	2.375	2.375	2.375	2.375	2.375	2.375	2.375	2.375	2.375
Casing Material	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304	SS/#304
Monitored Interval									
Top-Depth	22.0	16.0	23.0	36.0	21.0	92.0	103.0	57.0	
Midpoint-Depth	38.5	33.0	34.5	55.5	37.5	120.0	124.0	74.5	
Bottom-Depth	55.0	50.0	46.0	75.0	54.0	148.0	145.0	92.0	
Top-Elevation									
Midpoint-Elevation									
Bottom-Elevation									
Screen Material	SS/sw/.01								
Screen Length	30	30	20	30	30	50	30	30	30
Open-Hole Length									
Open-Hole Diameter									

APPENDIX D

CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME

EXPLANATION

Sampling Point:

BCK - Bear Creek Kilometer
GW - Monitoring Well
ET - Eastern Tributary (Bear Creek)
NT - Northern Tributary (Bear Creek)
SS - South Side (of Bear Creek, spring sampling station)

Location:

BG - Bear Creek Burial Grounds
EMWMF - Environmental Management Waste Management Facility
EXP - Exit Pathway Monitoring Location:
Maynardville Limestone Picket (-A, -B, -C, -W)
Spring or Surface Water Location (-SW)
OLF - Oil Landfarm
RS - Rust Spoil Area
S3 - S-3 Site
SPI - Spoil Area I

Monitoring Program:

GWPP - Y-12 Groundwater Protection Program
WRRP - Water Resources Restoration Program

Sample Type:

Dup - Field Duplicate Sample

Units:

ft - feet (elevations are above mean sea level and depths are below grade)
 $\mu\text{g/L}$ - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
 $\mu\text{mho}/\text{cm}$ - micromhos per centimeter
NTU - Nephelometric Turbidity Units
pCi/L - picoCuries per liter
ppm - parts per million

Notes:

Only the analytes that were detected above the program reporting limits in at least one sample are included in this appendix. Additionally, results that are below the reporting limits are replaced with missing values (e.g., “<”) to emphasize the detected results. The following sections describe the analytes, reporting limits, and data qualifiers for each sub-appendix. A comprehensive list of the GWPP analytes, analytical methods, and reporting limits is provided in Appendix B, Table B.5.

EXPLANATION (continued)

D.1 Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals:

Results for all of the field measurements, miscellaneous analytes, and major ions are included in this appendix. The reporting limits for the major ions are shown in the following summary.

Analyte	Reporting Limit (mg/L)		Analyte	Reporting Limit (mg/L)	
	GWPP	WRRP		GWPP	WRRP
Cations			Anions		
Calcium	0.2	0.25	Alkalinity - HCO ₃	1.0	NA
Magnesium	0.2	0.05	Alkalinity - CO ₃	1.0	NA
Potassium	2.0	0.25	Chloride	0.2	0.1
Sodium	0.2	0.25	Fluoride	0.1	0.05
			Nitrate (as Nitrogen)	0.028	0.1
			Sulfate	0.25	0.1

Results for all trace metals are included in this appendix except for antimony, molybdenum, selenium, silver, thallium, and thorium. None of the results for these metals were detected above the reporting limits (shown below) for any of the CY 2001 groundwater or surface water samples collected in the Bear Creek Regime.

Analyte	Reporting Limit (mg/L)		Analyte	Reporting Limit (mg/L)	
	GWPP	WRRP		GWPP	WRRP
Aluminum	0.2	0.05	Lithium	0.01	0.01
Antimony (PMS)	0.0025	.	Manganese	0.005	0.005
Antimony	.	0.006	Mercury (CVAA)	0.0002	0.0002
Arsenic (PMS)	0.005	.	Molybdenum	0.05	.
Arsenic	.	0.005	Nickel (PMS)	0.005	.
Barium	0.004	0.005	Nickel	0.05	0.01
Beryllium	0.001	0.001	Selenium (PMS)	0.01	.
Boron	0.1	0.01	Selenium	.	0.005
Cadmium (PMS)	0.0005	.	Silver	0.02	0.005
Cadmium	.	0.001	Strontium	0.005	0.005
Chromium (PMS)	0.0025	.	Thallium (PMS)	0.0005	.
Chromium	0.02	0.005	Thallium	.	0.002
Cobalt	0.02	0.005	Thorium	0.2	.
Copper	0.02	0.005	Uranium (PMS)	0.0005	.
Iron	0.05	0.01	Uranium (KPA)	.	0.004
Lead (PMS)	0.0005	.	Vanadium	0.02	0.01
Lead	.	0.003	Zinc	0.05	0.01

Metals analyses were performed using the inductively coupled plasma (ICP) spectroscopy method unless otherwise noted.

- CVAA - Cold Vapor Atomic Absorption (EPA-7470)
- KPA - Kinetic Phosphorescent Analysis (ASTM-D5174-M)
- PMS - Plasma Mass Spectroscopy (EPA-200.8)

EXPLANATION (continued)

Three samples collected for metals analysis by the ICP method during CY 2001 were diluted before analysis to obtain an optimum matrix, which elevated the reporting limits by the associated dilution factor. These samples were from well GW-537 collected in February (2X) and August (2X), and from surface water station NT-01 collected in July (5X). The detected results are valid, but some metals may be present at concentrations below the elevated reporting limits.

The following symbols and data qualifiers are used in Appendix D.1:

- . - Not analyzed or not applicable
- < - Analyzed but not detected at the project reporting level
- J - Estimated value; chromium or nickel ICP result when a PMS result is available.

D.2 Volatile Organic Compounds:

Results for the compounds shown in bold typeface are included in this appendix.

Volatile Organic Compound	Reporting Limit (µg/L)		Volatile Organic Compound	Reporting Limit (µg/L)	
	GWPP	WRRP		GWPP	WRRP
Acetone	10	10	1,1-Dichloroethene	5	5
Acrolein	10	.	cis-1,2-Dichloroethene	5	5
Acrylonitrile	5	.	trans-1,2-Dichloroethene	5	5
Benzene	5	5	1,2-Dichloropropane	5	5
Bromochloromethane	5	.	cis-1,3-Dichloropropene	5	5
Bromodichloromethane	5	5	trans-1,3-Dichloropropene	5	5
Bromoform	5	5	Dimethylbenzene	5	5
Bromomethane	5	10	Ethanol	200	.
2-Butanone	5	10	Ethylbenzene	5	5
Carbon disulfide	5	5	Ethyl methacrylate	5	.
Carbon tetrachloride	5	5	2-Hexanone	5	10
Chlorobenzene	5	5	Iodomethane	5	.
Chloroethane	5	10	4-Methyl-2-pentanone	5	10
2-Chloroethyl vinyl ether	10	.	Methylene chloride	5	5
Chloroform	5	5	Styrene	5	5
Chloromethane	5	10	1,1,1,2-Tetrachloroethane	5	.
Dibromochloromethane	5	5	1,1,2,2-Tetrachloroethane	5	5
1,2-Dibromo-3-chloropropane	10	.	Tetrachloroethene	5	5
1,2-Dibromoethane	5	.	Toluene	5	5
Dibromomethane	5	.	1,1,1-Trichloroethane	5	5
1,2-Dichlorobenzene	5	.	1,1,2-Trichloroethane	5	5
1,4-Dichlorobenzene	5	.	Trichloroethene	5	5
1,4-Dichloro-2-butene	5	.	Trichlorofluoromethane	5	.
trans-1,4-Dichloro-2-butene	5	.	1,2,3-Trichloropropane	10	.
Dichlorodifluoromethane	5	.	Vinyl acetate	10	.
1,1-Dichloroethane	5	5	Vinyl chloride	2	2
1,2-Dichloroethane	5	5			

EXPLANATION (continued)

Because acetone, bromomethane, chloromethane, chlorobenzene, and 1,2-dichloropropane were rarely detected during CY 2001, results for these compounds are shown below rather than in Appendix D.2.

Well Number	Date Sampled	Compound	Result (µg/L)
GW-008	01/03/01	1,2-Dichloropropane	2 J
GW-008	07/09/01	1,2-Dichloropropane	1 J
GW-085	02/05/01	Acetone	16 *
GW-115	07/09/01	Chloromethane	1 J
GW-226	08/02/01	Chlorobenzene	2 J
GW-712	01/02/01	Bromomethane	2 J

Notes: J = estimated result below the reporting limit
 * = not detected (<10 µg/L) in the duplicate sample

The following symbols and data qualifiers are used in Appendix D.2.

- . - Not analyzed or not applicable
- < - Analyzed but not detected at the project reporting level (also false-positive results for data provided by the WRRP)
- J - Positively identified; estimated concentration

D.3 Radiological Analytes:

The following summary shows the radiological analytes reported for at least one groundwater or surface water sample collected during CY 2001 in the Bear Creek Regime.

Analyte	No. of Results	No. Detected		Analyte	No. of Results	No. Detected	
		GWPP	WRRP			GWPP	WRRP
Gross Alpha	160	40	34	Plutonium-239/240	58	0	9
Gross Beta	167	57	60	Potassium-40	1	.	1
Americium-241	61	1	10	Radium-223/224/226	76	1	52
Bismuth-214	3	.	3	Strontium-89/90	76	0	8
Carbon-14	56	.	13	Technetium-99	170	39	23
Cesium-137	58	.	1	Thorium-228	58	0	10
Cobalt-60	58	.	3	Thorium-230	58	1	32
Curium-243/244	56	.	2	Thorium-232	58	0	8
Europium-152	56	.	0	Thorium-234	2	2	.
Europium-154	56	.	0	Tritium	58	0	9
Europium-155	56	.	1	Uranium-232	22	.	2
Iodine-129	58	0	1	Uranium-234	185	45	99
Lead-214	2	.	2	Uranium-235	185	16	34
Neptunium-237	76	2	34	Uranium-236	132	.	33
Plutonium-238	58	0	4	Uranium-238	185	42	78

All of the results for gross alpha and gross beta are presented in the first part of Appendix D.3, followed by results for the isotopes shown in bold typeface above.

EXPLANATION (continued)

The isotopic results that exceed the associated MDA in less than five samples collected in CY 2001 are shown in the following summary rather than in Appendix D.3.

Isotope	Sampling Point	Location	Date Sampled	Activity (pCi/L)		
				Result	Error	MDA
Bismuth-214	ET-4	WWSY	01/18/01	318.7	44.73	31.29
Bismuth-214	ET-4	WWSY	02/13/01	37.38	24.58	24.39
Bismuth-214	GW-918	EMWMF	04/02/01	52.72	18.05	13.11
Cesium-137	GW-917	EMWMF	06/04/01	7.11	6.93	5.16
Cobalt-60	GW-924	EMWMF	08/28/01	7.32	3.12	5
Cobalt-60	GW-925	EMWMF	08/27/01	8.59	4.06	6.46
Cobalt-60	GW-927	EMWMF	12/05/01	11.44	4.19	5.94
Curium-243/244	GW-918	EMWMF	12/03/01	0.7	0.43	0.46
Curium-243/244	GW-925	EMWMF	11/28/01	0.82	0.51	0.54
Europium-155	GW-917	EMWMF	06/04/01	17.46	8	8.48
Iodine-129	GW-917	EMWMF	06/04/01	38.28	13.72	11.76
Lead-214	ET-4	WWSY	01/18/01	324.4	42.51	28.57
Lead-214	GW-918	EMWMF	04/02/01	72.65	14.67	13.92
Plutonium-238	GW-639	EMWMF	06/13/01	0.84	0.65	0.79
Plutonium-238	GW-639	EMWMF	11/26/01	1.19	0.6	0.44
Plutonium-238	GW-916	EMWMF	08/22/01	0.8	0.41	0.38
Plutonium-238	GW-920	EMWMF	06/11/01	0.93	0.68	0.71
Potassium-40	GW-927	EMWMF	05/30/01	38.22	28.63	37.86
Thorium-234	BCK-11.97	EXP-SW	01/10/01	31	3.6	0.24
Thorium-234	BCK-11.97	EXP-SW	07/12/01	41	4.5	0.2
Uranium-232	BCK-03.30	EXP-SW	09/18/01	0.14	0.13	0.06
Uranium-232	NT-8-W	EXP-SW	09/18/01	0.95	0.41	0.08

The following notes and qualifiers apply to Appendix D.3:

- Activity - Result in picoCuries per liter (pCi/L)
- Error - Counting error (two standard deviations)
- MDA - Minimum detectable activity
- R - Result does not meet data quality objectives: duplicate results differ by more than an order of magnitude (e.g., tritium at well GW-916); or results that exceed the MDA but are less than the error (e.g., uranium-236 at well GW-079).

EXPLANATION (continued)

Additional Analytes Not Presented in Appendix D tables:

The Y-12 GWPP requested determination of the weight percent of uranium isotopes for the July 2001 sample from surface water station BCK-11.97.

Station	Date Sampled	Total Uranium (mg/L)	Weight Percent			
			U-234	U-235	U-236	U-238
BCK-11.97	07/12/01	0.14	0.008	0.444	0.01	99.54

The WRRP requested analyses of organic gases (ethane, ethylene, and methane) for 56 samples collected from 13 wells at the Environmental Management Waste Management Facility. As shown in the following summary, only methane was detected in samples from two wells.

Well Number	GW-363				GW-919
Date Sampled	04/04/01	06/04/01	08/28/01	11/29/01	12/04/01
Methane (µg/L)	150	290	280	230	27

The WRRP also requested field measurement of iron and manganese metal species at well GW-835, associated with remedial activities at the S-3 Site.

Well Number	Date Sampled	Manganese ++ (mg/L)	Iron ++ (mg/L)
GW-835	02/06/01	2.1	0.01
	05/16/01	0.9	0
	08/09/01	1.1	0
	11/14/01	1.9	0.01

APPENDIX D.1

FIELD MEASUREMENTS, MISCELLANEOUS ANALYTES, MAJOR IONS, AND TRACE METALS

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	BCK-00.63		BCK-03.30		BCK-04.55			BCK-07.87	
Location	EXP-SW		EXP-SW		EXP-SW			EXP-SW	
Date Sampled	01/11/01	07/11/01	03/22/01	09/18/01	01/11/01	07/12/01		01/11/01	07/11/01
Program	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type					Dup				
FIELD MEASUREMENTS									
Time Sampled	9:30	8:30	13:44	12:10	10:00	9:00	9:00	10:15	9:00
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	766	446	127	177	481	558	558	644	563
Dissolved Oxygen (ppm)	4.6	4.37	9	9.6	4.51	5.06	5.06	4.67	5.43
Oxidation/Reduction (mV)	240	222	112	50	184	228	228	183	98
Temperature (degrees C)	2	22	13	18.1	3.9	18.6	18.6	0.4	20.8
Turbidity (NTU)	.	.	11	38	.	.	.	.	.
pH	7.13	7.42	8.57	7.57	7.73	7.38	7.38	8.11	7.74
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	383	381	.	.	415	367	366	605	553
Dissolved Solids (mg/L)	215	230	160	265	222	244	247	369	309
Suspended Solids (mg/L)	<	6	<	<	<	5	6	<	3
Turbidity (NTU)	2.23	18.2	.	.	1.32	24.8	24.7	1.34	11.8
pH	8.02	8.01	.	.	7.95	7.85	7.81	8.14	8.16
MAJOR IONS (mg/L)									
Calcium	52.1	51	35.5	56.1	56.2	50.8	49.5	84.6	79.2
Magnesium	15	15.2	9.38	16.9	14.7	15.5	15.1	17	17.3
Potassium	<	2.12	1.12	1.98	<	<	<	<	2.46
Sodium	4.96	4.46	3.47	5.24	5.95	4.52	4.39	10.7	8.85
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	131	163	110	172	162	172	170	183	191
Chloride	7.14	6.3	5	7.4	11.5	7.44	7.46	20.4	15.1
Fluoride	0.107	0.128	.	<	0.109	0.109	0.109	0.208	0.206
Nitrate as N	2.55	1.16	2.2	1.2	5.36	1.66	1.64	16.7	10.7
Sulfate	31.1	28.4	9.6	42.6	13.2	9.17	9.08	21.9	19
Charge balance	5.1	-0.9	0.4	-1.7	0.5	0.6	-0.2	1.6	3.6
TRACE METALS (mg/L)									
Aluminum	<	0.754	0.253	0.0994	<	1.02	1.05	<	0.852
Arsenic (PMS)	<	<	.	.	<	<	<	<	<
Arsenic	.	.	.	.	.	.	.	.	.
Barium	0.0582	0.0687	0.0473	0.061	0.0615	0.0735	0.0717	0.09	0.105
Beryllium	<	<	<	<	<	<	<	<	<
Boron	<	<	0.0316	0.0446	<	<	<	0.133	0.156
Cadmium (PMS)	<	<	.	.	<	<	<	<	<
Cadmium	.	.	.	.	.	.	.	.	.
Chromium (PMS)	<	<	.	.	<	<	<	<	<
Chromium	<	<	.	.	<	<	<	<	<
Cobalt	<	<	.	.	<	<	<	<	<
Copper	<	<	.	.	<	<	<	<	<
Iron	0.113	0.585	0.208	0.157	0.056	0.76	0.788	<	0.54
Lead (PMS)	<	0.000506	.	.	<	0.000689	0.000639	<	<
Lead	.	.	.	.	.	.	.	.	.
Lithium	<	<	.	.	<	<	<	0.0186	0.0217
Manganese	0.0207	0.0612	0.0149	0.0268	0.0123	0.0628	0.0606	0.0122	0.034
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	.	.	<	0.00605	0.00565	<	<
Nickel	<	<	.	.	<	<	<	<	<
Selenium (PMS)	<	<	.	.	<	<	<	<	<
Strontium	0.156	0.155	0.0631	0.201	0.104	0.0886	0.0861	0.188	0.179
Thallium (PMS)	<	<	.	.	<	<	<	<	<
Uranium (PMS)	0.0223	0.0165	.	.	0.0416	0.0227	0.0227	0.113	0.0662
Uranium (KPA)	.	.	0.0325	0.0254	.	.	.	.	.
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	BCK-09.20		BCK-09.40		BCK-09.47		BCK-11.54	BCK-11.84
Location	EXP-SW		EXP-SW		EXP-SW		EXP-SW	EXP-SW
Date Sampled	03/21/01	09/17/01	01/10/01	07/11/01	03/21/01	09/17/01	09/17/01	09/17/01
Program	WRRP	WRRP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	13:32	12:10	12:00	9:45	13:05	11:55	12:26	12:45
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)								
Conductivity ($\mu\text{mho}/\text{cm}$)	199	242	1042	505	205	190	396	646
Dissolved Oxygen (ppm)	15.08	10.2	7.32	4.41	14.35	8.91	9.33	9.8
Oxidation/Reduction (mV)	155	75	237	206	165	60	55	65
Temperature (degrees C)	10.8	19.2	3.1	21.2	10	19	19.4	18.6
Turbidity (NTU)	145	32	.	.	103	30	30	31
pH	8.54	7.92	6.99	7.46	8.55	7.9	7.99	8.02
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)			615	466				
Dissolved Solids (mg/L)	228	317	365	284	180	234	713	1380
Suspended Solids (mg/L)	<	<	<	2	<	<	<	<
Turbidity (NTU)	.	.	1.08	5.47	.	.	.	.
pH	.	.	7.94	7.84	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	58.4	76.8	88	73.7	59.1	63.7	108	214
Magnesium	13.2	17.7	13.9	9.8	10.7	6.68	26.7	28.8
Potassium	1.64	2.59	2.11	2.87	1.87	2.64	3.91	7.11
Sodium	6.9	10.4	11.5	7.45	7.39	5.75	23.1	47.5
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	138	204	180	185	134	172	188	214
Chloride	11.2	18.7	24.6	16.2	12.2	14.2	40.8	81.1
Fluoride	0.18	0.12	0.219	0.208	0.19	<	0.25	0.48
Nitrate as N	9.4	10.4	18.7	8.26	9	0.52	49.7	98.8
Sulfate	17.5	20.4	23.3	12.6	18.4	8.1	27.3	49.3
Charge balance	2.6	0.2	-0.3	-1.4	1.7	0	-2	2.1
TRACE METALS (mg/L)								
Aluminum	0.0707	0.107	<	0.215	0.0859	<	<	0.0543
Arsenic (PMS)	.	.	<	<	.	.	.	.
Arsenic	<	<	.	.	<	<	<	<
Barium	0.074	0.1	0.0981	0.101	0.0771	0.091	0.219	0.276
Beryllium	<	<	<	<	<	<	<	<
Boron	0.0991	0.116	0.521	0.811	0.234	0.959	0.0278	0.0485
Cadmium (PMS)	.	.	<	<	.	.	.	.
Cadmium	<	<	.	.	<	<	<	<
Chromium (PMS)	.	.	<	<	.	.	.	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	0.122	0.102	0.0916	0.345	0.195	0.29	0.0389	0.0604
Lead (PMS)	.	.	<	<	.	.	.	.
Lead	<	<	.	.	<	<	<	<
Lithium	0.0292	0.0187	0.0763	0.101	0.0703	0.127	<	<
Manganese	0.0197	0.0097	0.0974	0.123	0.0539	0.135	0.0058	0.0235
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	.	.	.	.	.	.	.	.
Strontium	0.126	0.178	0.212	0.18	0.145	0.155	0.342	0.635
Thallium (PMS)	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	0.259	0.169	.	.	.	.
Uranium (KPA)	0.116	0.106	.	.	0.258	0.248	0.114	0.195
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	BCK-11.97		BCK-12.34		ET-4		GW-008	
Location	EXP-SW		EXP-SW		WWSY		OLF	
Date Sampled	01/10/01	07/12/01	03/21/01	09/17/01	01/18/01	02/13/01	01/03/01	07/09/01
Program	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	12:30	9:30	14:18	13:22	15:00	14:41	14:45	13:55
Measuring Point Elev. (ft)	.	.	.	.	.	.	965.39	965.39
Depth to Water (ft)	.	.	.	.	.	.	15.52	16.22
Groundwater Elevation (ft)	.	.	.	.	.	.	949.87	949.17
Conductivity ($\mu\text{mho}/\text{cm}$)	1418	1856	528	860	1171	147	103	130
Dissolved Oxygen (ppm)	7.59	4.58	17.46	9.04	9.36	8.84	11.8	3.08
Oxidation/Reduction (mV)	217	143	150	60	14	168	145	93
Temperature (degrees C)	1.8	21.5	9.3	19.3	8.6	10.3	12.9	18.3
Turbidity (NTU)	.	.	43	23	.	.	36	10
pH	7.72	7.74	8.01	8	6.65	6.52	5.71	5.53
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	1713	1783	.	.	.	.	.	.
Dissolved Solids (mg/L)	1160	1360	.	.	104	44	69	66
Suspended Solids (mg/L)	<	54	.	.	19	15.3	<	<
Turbidity (NTU)	1.02	7.53	.	.	.	.	.	.
pH	7.97	7.77	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	220	247	150	290	5.88	5.17	9.56	10.4
Magnesium	27.4	33.3	19.1	34.8	2.45	2.02	5.74	6.2
Potassium	4.19	6	3.79	8.82	1.84	1.6	1.07	1.11
Sodium	55.6	51.6	28.2	60.2	0.535	0.57	2.12	2.22
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	220	188	190	292	20	16	46	46
Chloride	97.5	80.5	48.3	101	1.2	1.2	6.5	8.6
Fluoride	0.988	0.888	0.72	0.73	<	<	0.19	<
Nitrate as N	116	138	59.3	141	0.36	0.1	0.57	0.029
Sulfate	40.7	41.1	38.3	49.1	5.3	6.8	1.5	1.5
Charge balance	-1.8	2	0.7	0.9	-0.4	-1.2	-5	-1.6
TRACE METALS (mg/L)								
Aluminum	<	<	0.266	<	1.6	0.507	<	<
Arsenic (PMS)	<	<	.	.	.	.	.	.
Arsenic	.	.	<	<	<	<	<	<
Barium	0.353	0.401	0.228	0.415	0.0338	0.03	0.0718	0.0737
Beryllium	<	<	<	<	<	<	<	<
Boron	<	<	0.0272	0.0558	0.0117	<	<	<
Cadmium (PMS)	0.0143	0.000686	.	.	.	.	.	.
Cadmium	.	.	0.0079	0.0105	<	<	<	<
Chromium (PMS)	<	<	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	0.0031	<	<	<	0.0132	0.014
Copper	<	<	<	<	<	<	<	<
Iron	<	<	0.107	0.0139	1.22	0.296	1.55	1.73
Lead (PMS)	<	<	.	.	.	.	.	.
Lead	.	.	<	<	<	<	<	<
Lithium	<	<	<	0.011	<	<	<	<
Manganese	2.45	0.0313	1.56	1.43	0.127	0.0216	1.11	1.17
Mercury (CVAA)	<	<	.	.	<	<	<	<
Nickel (PMS)	0.0692	0.00534	.	.	.	.	.	.
Nickel	0.0591 J	<	0.0326	0.0377	<	<	0.0191	0.0222
Selenium (PMS)	<	<	.	.	.	.	.	.
Strontium	0.587	0.833	0.409	0.785	0.0116	0.0098	0.0209	0.0228
Thallium (PMS)	<	<	.	.	.	.	.	.
Uranium (PMS)	0.101	0.139	.	.	.	.	.	.
Uranium (KPA)	.	.	.	.	.	.	.	.
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	0.0126	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-046		GW-053		GW-056	GW-077		GW-078	
Location	BG		BG		EXP-A	BG		BG	
Date Sampled	01/04/01	07/09/01	02/12/01	07/25/01	03/14/01	01/31/01	08/01/01	01/31/01	08/01/01
Program	WRRP	WRRP	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	10:10	10:00	13:50	13:15	10:15	9:20	10:40	9:05	13:55
Measuring Point Elev. (ft)	921.17	921.17	903.40	903.40	891.50	919.30	919.30	918.10	918.10
Depth to Water (ft)	6.16	5.30	7.04	11.08	8.02	4.50	6.90	5.10	5.87
Groundwater Elevation (ft)	915.01	915.87	896.36	892.32	883.48	914.80	912.40	913.00	912.23
Conductivity ($\mu\text{mho}/\text{cm}$)	235	216	795	729	911	350	360	377	417
Dissolved Oxygen (ppm)	2.82	2.62	0.52	1.07	7.31	1.31	4.36	5.28	3.9
Oxidation/Reduction (mV)	166	161	130	-38	109	-65	-78	218	130
Temperature (degrees C)	12.6	18.7	12.2	14.5	13.3	12.6	18.1	12.3	18
Turbidity (NTU)	21	22	.	.	.	18	27	15	29
pH	5.06	5.33	6.51	6.79	7.32	7.58	7.58	7.45	8.09
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	676	695	739	.	.	.	.
Dissolved Solids (mg/L)	140	117	379	412	418	199	257	210	244
Suspended Solids (mg/L)	<	<	<	<	147	6.1	<	<	<
Turbidity (NTU)	.	.	1.14	4.03	66.9	.	.	.	.
pH	.	.	7.1	7.36	7.41	.	.	.	.
MAJOR IONS (mg/L)									
Calcium	22.8	20.8	119	128	94.2	49.8	50.4	62.2	63.3
Magnesium	6.52	5.61	14	14	19.9	11.5	11.7	8.26	8.61
Potassium	4.17	3.78	2.35	2.07	<	2.43	2.59	1.37	1.44
Sodium	5.73	5.46	9.14	9.06	49.1	6.04	6.31	4.53	4.53
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	36	50	310	330	264	172	180	192	192
Chloride	39.5	30.7	18.5	18.7	71.1	1.3	2.1	1.5	2.3
Fluoride	<	<	<	<	<	0.11	<	<	<
Nitrate as N	0.079	<	<	<	0.479	0.26	<	<	<
Sulfate	9.9	11	16.3	16.6	23.8	11.4	11.8	13.8	11.3
Charge balance	-0.2	-6.5	3.4	3.4	4.1	0.3	-1.1	-1.9	-0.5
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	3.31	<	<	<	<
Arsenic (PMS)	.	.	<	<	0.00537	.	.	.	.
Arsenic	<	<	.	.	.	<	<	<	<
Barium	0.202	0.183	0.183	0.196	0.0957	0.428	0.44	0.172	0.171
Beryllium	<	<	<	<	<	<	<	<	<
Boron	0.0379	0.037	0.348	0.305	<	0.0145	0.0146	0.0125	0.0125
Cadmium (PMS)	.	.	<	<	0.000997	.	.	.	.
Cadmium	<	<	.	.	.	<	<	0.001	<
Chromium (PMS)	.	.	<	<	0.0893	.	.	.	.
Chromium	<	<	<	<	0.0805	<	<	<	<
Cobalt	0.0219	0.0183	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	2.3	0.862	0.0902	0.585	3.33	0.138	0.128	0.016	0.0149
Lead (PMS)	.	.	<	<	0.00966	.	.	.	.
Lead	<	<	.	.	.	<	<	<	<
Lithium	0.101	0.0995	0.489	0.432	<	0.0108	0.0112	0.0115	0.0117
Manganese	1.58	1.35	0.0838	0.0899	0.163	0.0727	0.0706	<	0.0086
Mercury (CVAA)	<	<	<	<	<	.	.	.	.
Nickel (PMS)	.	.	0.0293	0.0253	0.0744	.	.	.	.
Nickel	0.0188	0.0179	<	<	0.067	<	<	<	<
Selenium (PMS)	.	.	<	0.0232	<	.	.	.	.
Strontium	0.0848	0.0771	0.373	0.395	0.132	1.21	1.28	0.125	0.128
Thallium (PMS)	.	.	<	<	<	.	.	.	.
Uranium (PMS)	.	.	0.00275	0.00282	0.00685	.	.	.	.
Uranium (KPA)	<	<	.	.	.	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-079		GW-080				GW-082	
Location	BG		BG				BG	
Date Sampled	01/31/01	08/02/01	01/31/01		08/06/01		02/13/01	07/26/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP
Sample Type			Dup		Dup			
FIELD MEASUREMENTS								
Time Sampled	10:45	14:05	13:30	.	9:30	.	13:35	10:50
Measuring Point Elev. (ft)	981.20	981.20	981.00	.	981.00	.	964.00	964.00
Depth to Water (ft)	22.90	23.76	23.26	.	24.65	.	21.62	21.81
Groundwater Elevation (ft)	958.30	957.44	957.74	.	956.35	.	942.38	942.19
Conductivity ($\mu\text{mho}/\text{cm}$)	250	273	164	.	312	.	958	969
Dissolved Oxygen (ppm)	1.35	0.92	1.69	.	3.42	.	1.58	0.42
Oxidation/Reduction (mV)	-164	-163	-25	.	-49	.	44	-36
Temperature (degrees C)	13.7	17.8	13.5	.	15	.	13.1	16.4
Turbidity (NTU)	13	31	22	.	12	.	.	.
pH	7.57	6.93	6.78	.	5.68	.	6.9	6.78
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	773	991
Dissolved Solids (mg/L)	139	174	84	104	98	105	451	612
Suspended Solids (mg/L)	<	<	9.1	10.7	17	14	8	<
Turbidity (NTU)	.	.	.	.	.	.	19.5	4.52
pH	.	.	.	.	.	.	7.34	7.12
MAJOR IONS (mg/L)								
Calcium	38.1	40.8	5.63	5.79	5.59	5.62	132	171
Magnesium	4.1	4.34	6.4	6.6	6.5	6.42	15	17.9
Potassium	1.62	1.88	1.41	1.46	1.48	1.39	<	<
Sodium	4.4	4.73	11	11.1	12.4	12.2	7.64	9.04
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	110	122	56	54	62	60	254	302
Chloride	1.2	1.2	1.7	1.3	1.1	1.1	94.3	139
Fluoride	0.11	<	0.2	0.25	0.17	0.16	0.103	<
Nitrate as N	<	<	0.38	0.2	<	<	0.0726	<
Sulfate	7.7	5.6	12.2	12.2	16.2	23.8	6.09	5.37
Charge balance	1.5	1.1	-4.9	.	-7.4	.	1.7	1.6
TRACE METALS (mg/L)								
Aluminum	<	<	0.122	0.172	0.241	0.12	<	<
Arsenic (PMS)	.	.	.	.	.	.	<	<
Arsenic	<	<	<	<	<	<	.	.
Barium	0.26	0.279	0.0254	0.027	0.0286	0.0275	0.706	1.09
Beryllium	<	<	<	<	<	<	<	<
Boron	<	<	0.0143	0.0145	0.0181	0.016	10.2	17.2
Cadmium (PMS)	.	.	.	.	.	.	<	<
Cadmium	<	<	<	<	<	<	.	.
Chromium (PMS)	.	.	.	.	.	.	0.113	0.00642
Chromium	<	<	<	<	<	<	0.0532 J	<
Cobalt	<	<	0.0073	0.0074	0.0066	0.0068	<	<
Copper	<	<	<	<	<	<	<	<
Iron	0.474	0.483	5.77	6.02	5.97	5.87	1.3	0.566
Lead (PMS)	.	.	.	.	.	.	0.0012	0.00907
Lead	<	<	<	<	<	<	.	.
Lithium	<	<	0.0114	0.0119	0.0115	0.0111	0.0922	0.39
Manganese	0.128	0.143	0.315	0.324	0.275	0.28	0.765	1.4
Mercury (CVAA)	.	.	.	.	.	.	<	<
Nickel (PMS)	.	.	.	.	.	.	0.102	0.0614
Nickel	<	<	<	<	<	<	0.0903 J	0.0568 J
Selenium (PMS)	.	.	.	.	.	.	<	0.0144
Strontium	0.142	0.155	0.0278	0.0286	0.0285	0.0281	0.249	0.309
Thallium (PMS)	.	.	.	.	.	.	<	<
Uranium (PMS)	.	.	.	.	.	.	0.000646	<
Uranium (KPA)	<	<	<	<	<	<	.	.
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	0.01	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-085			GW-098		GW-115		GW-124	
Location	OLF			OLF		S3		S3	
Date Sampled	02/05/01		08/01/01	03/13/01	08/08/01	01/04/01	07/09/01	03/19/01	08/09/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP
Sample Type	DUP								
FIELD MEASUREMENTS									
Time Sampled	13:10	13:10	13:00	13:55	9:15	10:20	13:40	10:00	8:55
Measuring Point Elev. (ft)	983.50	983.50	983.50	946.00	946.00	1055.01	1055.01	1006.85	1006.85
Depth to Water (ft)	14.69	14.69	14.29	11.86	15.15	13.70	14.50	14.61	17.96
Groundwater Elevation (ft)	968.81	968.81	969.21	934.14	930.85	1041.31	1040.51	992.24	988.89
Conductivity ($\mu\text{mho}/\text{cm}$)	2630	2630	2550	1593	1506	501	573	1111	1040
Dissolved Oxygen (ppm)	1.09	1.09	6.29	2.79	2.1	6.25	4.52	1.3	0.43
Oxidation/Reduction (mV)	165	165	182	97	110	-67	-115	171	158
Temperature (degrees C)	14	14	17	16	17.1	15.2	19.5	15.6	17.3
Turbidity (NTU)	.	.	.	.	.	28	32	.	.
pH	7.1	7.1	6.66	6.76	6.44	7.49	7.39	6.97	6.64
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	2190	2190	2450	1369	1449	.	.	970	981
Dissolved Solids (mg/L)	1570	1600	1920	796	922	<	340	605	594
Suspended Solids (mg/L)	69	65	19	<	<	<	<	<	<
Turbidity (NTU)	50.8	49.8	14.5	0.589	0.326	.	.	1.12	0.948
pH	6.86	7.02	7.09	6.78	6.78	.	.	7.04	7
MAJOR IONS (mg/L)									
Calcium	353	368	400	241	241	89.6	90	163	163
Magnesium	23.1	23.8	26.8	25.4	26.8	16.2	16.5	18.4	17.9
Potassium	4.44	3.72	2.36	4.22	4.34	2.24	3.96	5.81	6.27
Sodium	12.6	13.1	15.2	25	26.7	12.2	12.5	16	20.9
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	190	190	212	560	528	270	246	274	278
Chloride	13.8	14	15.2	115	141	34.3	29.8	23.7	36.7
Fluoride	<	<	<	<	<	0.12	<	<	0.119
Nitrate as N	224	219	254	<	<	0.53	0.03	12.5	25.6
Sulfate	6.28	6.31	6.82	28.6	25.7	17.3	17.5	138	86.3
Charge balance	-0.3	2.5	-0.1	0.9	1.4	-2.9	2.9	2.8	2.2
TRACE METALS (mg/L)									
Aluminum	6.61	3.99	0.235	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	0.00513	.	.	<	<
Arsenic	.	.	.	.	.	<	<	.	.
Barium	0.924	0.957	1.11	0.681	0.712	0.226	0.227	0.122	0.137
Beryllium	<	<	<	<	<	<	<	<	<
Boron	<	<	<	0.154	0.159	0.0168	0.0153	<	<
Cadmium (PMS)	<	<	<	<	<	.	.	<	<
Cadmium	.	.	.	.	.	<	<	.	.
Chromium (PMS)	0.00479	0.0055	<	<	<	.	.	<	<
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	3.84	3.08	0.192	<	0.0542	0.493	0.762	0.302	0.107
Lead (PMS)	0.00562	0.00487	0.00452	0.00939	0.0123	.	.	<	<
Lead	.	.	.	.	.	<	<	.	.
Lithium	0.0253	0.0248	0.0247	0.0385	0.038	0.0226	0.025	<	<
Manganese	0.106	0.107	0.0264	0.847	0.914	0.738	0.715	<	0.0111
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	0.015	0.0149	0.00792	0.0659	0.072	.	.	<	<
Nickel	<	<	<	<	0.0669 J	<	<	<	<
Selenium (PMS)	<	<	<	<	0.0342	.	.	<	<
Strontium	0.787	0.819	0.952	0.784	0.806	0.157	0.162	0.305	0.312
Thallium (PMS)	<	<	<	<	<	.	.	<	0.000604
Uranium (PMS)	0.00201	0.000955	0.000506	0.00213	0.00194	.	.	0.00534	0.0048
Uranium (KPA)	.	.	.	.	.	.	.	.	.
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	0.0135	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-225			GW-226			GW-276	
Location	OLF			OLF			S3	
Date Sampled	03/19/01	08/08/01		02/06/01	08/02/01		01/04/01	07/10/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP
Sample Type		Dup			Dup			
FIELD MEASUREMENTS								
Time Sampled	13:45	10:25	10:25	13:25	9:20	9:20	14:25	14:00
Measuring Point Elev. (ft)	943.11	943.11	943.11	943.60	943.60	943.60	1001.57	1001.57
Depth to Water (ft)	8.74	17.34	17.34	15.64	15.08	15.08	7.63	7.80
Groundwater Elevation (ft)	934.37	925.77	925.77	927.96	928.52	928.52	993.94	993.77
Conductivity ($\mu\text{mho}/\text{cm}$)	1115	1073	1073	1112	1109	1109	1233	1228
Dissolved Oxygen (ppm)	0.78	0.86	0.86	0.34	0.73	0.73	7.21	2.59
Oxidation/Reduction (mV)	97	144	144	147	70	70	283	176
Temperature (degrees C)	13.6	16.7	16.7	14	17.3	17.3	13	20.1
Turbidity (NTU)	.	.	.	.	.	.	36	32
pH	7.42	7.18	7.18	7.33	6.65	6.65	5.75	4.89
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	985	1018	1018	920	1058	1066	.	.
Dissolved Solids (mg/L)	509	646	659	547	689	673	760	1130
Suspended Solids (mg/L)	1	<	<	1	<	<	<	<
Turbidity (NTU)	4.48	0.51	0.513	8.59	9.81	10.2	.	.
pH	7.51	7.43	7.51	7.33	7.06	6.99	.	.
MAJOR IONS (mg/L)								
Calcium	106	109	107	102	141	143	94.7	102
Magnesium	45.4	47.6	46.6	38.4	41.7	40.6	16.4	17.6
Potassium	3.04	3.23	3.17	6.24	2.93	2.73	11	11.8
Sodium	22.5	23.4	22.9	21.5	23.2	22.6	74.5	86.7
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	206	216	218	318	406	396	22	13.5
Chloride	55.3	59.3	57.8	58.8	58.1	59	188	186
Fluoride	0.543	0.513	0.503	<	<	<	1.9	2.9
Nitrate as N	35.4	37.3	37.2	8.02	7.98	8.61	69.2	67.2
Sulfate	64.9	62	62.1	38.6	30.6	30.3	39.4	44.3
Charge balance	2.5	2.4	1.4	-0.3	2.6	3.2	-9.5	-3.5
TRACE METALS (mg/L)								
Aluminum	<	<	<	<	<	<	3.54	5.86
Arsenic (PMS)	<	<	<	<	<	<	.	.
Arsenic	.	.	.	.	.	.	<	<
Barium	0.157	0.161	0.157	0.155	0.217	0.214	0.238	0.245
Beryllium	<	<	<	<	<	<	0.0043	0.0069
Boron	0.132	0.132	0.13	0.143	0.18	0.176	0.0313	0.0285
Cadmium (PMS)	<	<	<	<	<	<	.	.
Cadmium	.	.	.	.	.	.	0.0236	0.0262
Chromium (PMS)	<	<	<	<	<	<	.	.
Chromium	<	<	<	<	<	<	<	0.007
Cobalt	<	<	<	<	<	<	0.0861	0.108
Copper	<	<	<	<	<	<	0.0077	0.0106
Iron	0.532	<	0.0561	0.806	0.953	1.01	0.0162	0.0261
Lead (PMS)	<	<	<	<	0.00105	0.00152	.	.
Lead	.	.	.	.	.	.	<	<
Lithium	0.0167	0.0216	0.0218	0.0208	0.0164	0.0154	0.0188	0.0257
Manganese	0.092	0.0152	0.0123	0.557	1.03	1.07	4.55	4.92
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	<	0.00817	0.0112	0.012	.	.
Nickel	<	<	<	<	<	<	0.212	0.271
Selenium (PMS)	<	<	<	<	0.0183	0.0232	.	.
Strontium	2.25	2.27	2.23	0.539	0.6	0.583	0.224	0.241
Thallium (PMS)	<	0.000527	0.000521	<	<	<	.	.
Uranium (PMS)	0.00346	0.00326	0.00338	0.0192	0.0157	0.0158	.	.
Uranium (KPA)	.	.	.	.	.	.	0.822	1.5
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	0.0586	0.0769

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-311		GW-315		GW-363			
Location	RS		SPI		EMWMF			
Date Sampled	02/05/01	07/31/01	01/29/01	07/31/01	04/04/01	06/04/01	08/28/01	11/29/01
Program	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	10:15	13:10	10:25	10:05	10:40	12:45	10:05	10:00
Measuring Point Elev. (ft)	999.65	999.65	1047.48	1047.48	958.71	958.71	958.71	958.71
Depth to Water (ft)	38.08	37.29	56.51	56.62	4.87	5.40	5.85	6.15
Groundwater Elevation (ft)	961.57	962.36	990.97	990.86	953.84	953.31	952.86	952.56
Conductivity ($\mu\text{mho}/\text{cm}$)	542	449	918	798	479	491	487	496
Dissolved Oxygen (ppm)	6.2	6.53	0.82	0.25	6.3	5.39	1.18	0.93
Oxidation/Reduction (mV)	174	152	184	127	62	46	191	138
Temperature (degrees C)	12.1	17.8	14.3	16	15.4	18.9	21.8	17.4
Turbidity (NTU)	.	.	.	.	26	28	17	10
pH	7.29	6.35	7.32	7.05	9.9	9.38	8.58	9.02
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	440	411	753	747	.	.	.	.
Dissolved Solids (mg/L)	260	238	447	455	287	295	275	295
Suspended Solids (mg/L)	<	<	<	<	<	<	<	<
Turbidity (NTU)	0.424	0.199	0.423	0.449	.	.	.	.
pH	7.34	7.22	7.23	7.2	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	82.2	82.5	127	131	2.12	1.95	2.63	1.94
Magnesium	5.47	4.93	14.2	15	0.833	0.768	0.999	0.806
Potassium	<	<	3.67	3.78	1.87	1.78	1.95	1.9
Sodium	2.96	2.87	9.32	9.7	113	111	114	124
Alkalinity as CO ₃	<	<	<	<	32	40	32	24
Alkalinity as HCO ₃	216	210	154	276	204	204	210	222
Chloride	2.25	2.14	17.3	17.4	1	1	1.8	0.96
Fluoride	<	<	<	<	0.16	0.26	0.19	0.2
Nitrate as N	0.292	0.265	10.7	11.1	<	<	0.022	<
Sulfate	3.36	3.03	61.6	59.1	8.4	9	8.6	8.8
Charge balance	2.3	3.4	17.6	1.6	1.3	-0.9	1.4	4.3
TRACE METALS (mg/L)								
Aluminum	<	<	<	<	0.0651	<	<	<
Arsenic (PMS)	<	<	<	<	.	.	.	.
Arsenic	.	.	.	.	<	<	<	<
Barium	0.0179	0.0174	0.0614	0.0646	0.0688	0.0649	0.0773	0.0665
Beryllium	<	<	<	<	<	<	<	<
Boron	<	<	<	<	0.311	0.303	0.326	0.35
Cadmium (PMS)	<	<	<	<	.	.	.	.
Cadmium	.	.	.	.	<	<	<	<
Chromium (PMS)	0.00702	0.00395	<	<	.	.	.	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	<	<	<	<	0.0937	0.0581	0.0384	0.0492
Lead (PMS)	<	0.00703	<	<	.	.	.	.
Lead	.	.	.	.	<	<	<	<
Lithium	<	<	<	<	0.0502	0.0474	0.0495	0.0583
Manganese	<	<	0.0281	0.0528	<	<	<	<
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	<	<	.	.	.	.
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	<	<	.	.	.	.
Strontium	0.0709	0.07	0.207	0.215	0.0914	0.0868	0.103	0.0931
Thallium (PMS)	<	<	<	<	.	.	.	.
Uranium (PMS)	0.000513	<	0.00208	0.00248	.	.	.	.
Uranium (KPA)	.	.	.	.	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-364		GW-365			GW-526		GW-537		
Location	OLF		OLF			S3		OLF		
Date Sampled	03/13/01	08/07/01	03/27/01		08/07/01	02/01/01	08/06/01	02/06/01	08/02/01	
Program	GWPP	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	
Sample Type			Dup							
FIELD MEASUREMENTS										
Time Sampled	10:40	9:00	13:15	13:15	10:20	10:10	14:05	10:30	11:05	
Measuring Point Elev. (ft)	935.95	935.95	935.58	935.58	935.58	998.25	998.25	976.44	976.44	
Depth to Water (ft)	13.94	21.41	9.33	9.33	12.16	14.18	15.39	7.33	6.92	
Groundwater Elevation (ft)	922.01	914.54	926.25	926.25	923.42	984.07	982.86	969.11	969.52	
Conductivity ($\mu\text{mho}/\text{cm}$)	497	666	1275	1275	1145	1176	5970	6360	5550	
Dissolved Oxygen (ppm)	1.38	0.97	0.49	0.49	0.49	3.53	1.4	0.25	0.34	
Oxidation/Reduction (mV)	131	209	-93	-93	-106	194	107	163	173	
Temperature (degrees C)	13.2	15.3	12.4	12.4	14.8	10	21.4	14.2	15.4	
Turbidity (NTU)	.	.	.	.	.	16	9	.	.
pH	8.02	7.25	7.15	7.15	6.9	8.31	8.44	7.03	6.67	
MISCELLANEOUS										
Conductivity ($\mu\text{mho}/\text{cm}$)	427	646	1065	1077	1095	.	.	5490	5450	
Dissolved Solids (mg/L)	236	419	611	612	634	7670	8260	4320	4340	
Suspended Solids (mg/L)	<	<	22	24	21	<	<	<	<	
Turbidity (NTU)	1.15	1.13	206	207	199	.	.	0.995	1.13	
pH	8.04	7.68	7.07	7.01	7.15	.	.	6.86	6.7	
MAJOR IONS (mg/L)										
Calcium	62	93.2	153	157	154	173	174	986	991	
Magnesium	15	20.7	36.8	37.9	39.2	60.4	66.2	68.2	71.7	
Potassium	3.72	4.22	4.02	4.13	4.2	25.6	26.4	<	<	
Sodium	5.11	8.36	18.8	19.4	19.6	1540	1560	38.9	41.2	
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<	
Alkalinity as HCO ₃	170	254	410	408	414	43	43	318	298	
Chloride	19.9	37	81.9	82.7	85.4	29.3	36.2	34.3	32	
Fluoride	<	<	<	<	<	0.26	<	<	<	
Nitrate as N	0.808	0.251	<	<	<	1360	1310	662	620	
Sulfate	18.4	25.6	29.4	29.6	36.8	4	5.6	4.24	3.75	
Charge balance	2.7	1.1	2.1	3.5	1.8	-9.8	-7.2	1.6	5.5	
TRACE METALS (mg/L)										
Aluminum	<	<	<	<	<	<	<	<	<	
Arsenic (PMS)	<	<	<	<	<	.	.	<	<	
Arsenic	.	.	.	.	.	<	<	.	.
Barium	0.122	0.165	0.322	0.33	0.338	15.8	15.3	2.23	2.37	
Beryllium	<	<	<	<	<	<	<	<	<	
Boron	<	0.129	0.189	0.192	0.198	0.22	0.21	<	<	
Cadmium (PMS)	<	<	<	<	<	.	.	<	<	
Cadmium	.	.	.	.	.	<	<	.	.
Chromium (PMS)	0.00309	<	<	<	<	.	.	<	<	
Chromium	<	<	<	<	<	<	<	<	<	
Cobalt	<	<	<	<	<	<	<	<	<	
Copper	<	<	<	<	<	<	<	<	<	
Iron	0.0802	<	16.3	16.8	14.6	0.015	0.233	<	<	
Lead (PMS)	<	<	<	<	<	.	.	<	<	
Lead	.	.	.	.	.	<	<	.	.
Lithium	0.0117	0.0169	0.0452	0.0459	0.0458	1.18	0.852	0.0355	0.0361	
Manganese	0.00607	0.0226	0.236	0.243	0.174	0.0329	0.0345	<	<	
Mercury (CVAA)	<	<	0.000775	<	<	.	.	<	<	
Nickel (PMS)	0.0076	0.0128	0.0376	0.0372	0.038	.	.	0.0308	0.0164	
Nickel	<	<	<	<	<	<	<	<	<	
Selenium (PMS)	<	0.0176	<	<	0.0315	.	.	<	<	
Strontium	0.497	0.692	1.29	1.32	1.36	20	20	2.55	2.69	
Thallium (PMS)	<	0.000675	<	<	0.000545	.	.	<	<	
Uranium (PMS)	0.00265	0.00267	0.000511	0.000512	0.000669	.	.	0.00902	0.00135	
Uranium (KPA)	.	.	.	.	.	<	<	.	.
Vanadium	<	<	<	<	<	<	<	<	<	
Zinc	<	<	<	<	<	<	<	<	<	

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-616		GW-627		GW-639			
Location	S3		BG		EMWMF			
Date Sampled	03/27/01	08/09/01	02/13/01	07/26/01	04/05/01	06/13/01	08/28/01	11/26/01
Program	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	9:50	10:15	10:10	9:00	9:45	10:00	10:40	13:55
Measuring Point Elev. (ft)	1011.81	1011.81	943.65	943.65	940.70	940.70	940.70	940.70
Depth to Water (ft)	8.75	10.72	25.22	25.84	11.26	11.76	11.73	11.21
Groundwater Elevation (ft)	1003.06	1001.09	918.43	917.81	929.44	928.94	928.97	929.49
Conductivity ($\mu\text{mho}/\text{cm}$)	2910	2630	1469	1263	968	930	999	918
Dissolved Oxygen (ppm)	1.37	0.45	0.39	0.45	8.05	3.83	2.7	3.32
Oxidation/Reduction (mV)	145	76	-225	-244	184	159	99	235
Temperature (degrees C)	13.3	19.9	14	15.9	14.6	17.5	19.1	18.2
Turbidity (NTU)	.	.	.	.	28	15	28	22
pH	9.95	9.55	9.03	8.89	9.65	9.44	9.56	8.96
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	2500	2540	1235	1236	.	.	.	.
Dissolved Solids (mg/L)	1870	1850	723	714	535	587	569	532
Suspended Solids (mg/L)	7	<	<	<	<	<	<	<
Turbidity (NTU)	41.7	3.97	1.77	0.735	.	.	.	.
pH	9.76	9.78	9.14	9.23	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	2.47	2.34	1.2	1.27	1.32	1.33	1.31	1.32
Magnesium	0.903	0.844	0.24	0.257	0.47	0.485	0.472	0.48
Potassium	5.01	4.99	<	<	2.99	3.19	2.99	3.12
Sodium	505	535	291	312	218	197	223	220
Alkalinity as CO ₃	52.4	60.8	90.4	90	120	112	120	130
Alkalinity as HCO ₃	60.6	58.2	478	418	184	324	324	312
Chloride	18.1	21.5	44.8	46.6	8.6	9.2	9.7	9.9
Fluoride	0.686	0.699	4.96	4.69	2.2	2.2	2	2.1
Nitrate as N	277	265	<	<	<	<	<	<
Sulfate	14.6	17.8	23.3	17.8	26.9	27.1	27.1	26.7
Charge balance	-1.5	2.7	-2.5	6.1	15.7	-5	0.1	-0.2
TRACE METALS (mg/L)								
Aluminum	0.34	<	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	.	.	.	.
Arsenic	.	.	.	.	<	<	<	<
Barium	0.195	0.157	0.0458	0.0473	0.0821	0.0835	0.0807	0.0807
Beryllium	<	<	<	<	<	<	<	<
Boron	0.856	0.874	0.474	0.505	0.596	0.614	0.627	0.604
Cadmium (PMS)	<	<	<	<	.	.	.	.
Cadmium	.	.	.	.	<	<	<	<
Chromium (PMS)	<	<	<	<	.	.	.	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	3.61	0.267	0.249	0.192	0.164	0.202	0.177	0.167
Lead (PMS)	0.0288	0.00229	<	0.000722	.	.	.	.
Lead	.	.	.	.	<	<	<	<
Lithium	0.289	0.294	0.0866	0.0915	0.121	0.127	0.117	0.131
Manganese	0.0356	<	0.0194	0.0172	<	<	<	<
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	<	<	.	.	.	.
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	<	0.0142	.	.	.	.
Strontium	0.333	0.327	0.084	0.0883	0.136	0.135	0.136	0.138
Thallium (PMS)	<	0.000641	<	<	.	.	.	.
Uranium (PMS)	<	<	<	<	.	.	.	.
Uranium (KPA)	.	.	.	.	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-653		GW-683		GW-684		GW-685	GW-695	
Location	BG		EXP-A		EXP-A		EXP-A	EXP-B	
Date Sampled	02/12/01	07/25/01	01/09/01	07/10/01	01/09/01	07/10/01	03/14/01	01/16/01	07/16/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	10:25	9:50	13:45	7:55	10:05	9:05	13:20	13:20	9:55
Measuring Point Elev. (ft)	931.80	931.80	972.26	972.26	898.86	898.86	892.31	939.57	939.57
Depth to Water (ft)	24.31	24.92	89.09	89.04	15.79	15.79	8.43	30.29	31.63
Groundwater Elevation (ft)	907.49	906.88	883.17	883.22	883.07	883.07	883.88	909.28	907.94
Conductivity ($\mu\text{mho}/\text{cm}$)	39.7	37.4	517	633	494	659	963	683	581
Dissolved Oxygen (ppm)	5.56	5.04	5.94	1.71	1.55	1.04	0.56	5.3	2.69
Oxidation/Reduction (mV)	254	313	162	203	190	35	119	169	204
Temperature (degrees C)	13.3	14	12.5	13.6	12.4	13.6	14	12	16.5
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	5.08	4.91	7.18	7.31	7.44	7.15	7.2	7.57	7.3
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	30.6	32	573	519	515	540	837	541	556
Dissolved Solids (mg/L)	29	34	340	287	282	300	466	302	343
Suspended Solids (mg/L)	<	<	50	<	<	<	1	<	<
Turbidity (NTU)	0.332	0.8	72.1	1.17	0.523	1.02	16.2	2.08	1.52
pH	5.52	5.69	7.64	7.61	7.84	7.67	7.2	7.95	7.67
MAJOR IONS (mg/L)									
Calcium	1.87	2.02	79.2	70.6	66.9	72.9	97.8	59.1	62.8
Magnesium	0.997	1.08	22.4	21.7	19.5	19.2	29.1	26.2	26.5
Potassium	<	<	2.39	<	7.27	5.86	<	2.68	2.48
Sodium	2.06	2.31	8.89	6.87	7.84	8.04	37.9	7.97	7.48
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	13	12.8	238	214	210	222	288	226	208
Chloride	0.932	0.951	16.2	12.6	17	18.7	64.8	15.1	14.8
Fluoride	<	<	0.148	0.158	0.169	0.187	0.106	0.104	0.112
Nitrate as N	<	<	13.1	8.38	6.42	6.93	3.15	10.9	12
Sulfate	1.38	1.4	22.5	20	15.1	15.4	28.3	13.2	13.5
Charge balance	-7.1	-1.5	-3	-0.4	0.1	-0.6	3	-4.2	-0.1
TRACE METALS (mg/L)									
Aluminum	<	<	4.07	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	<	<	<	<	<
Arsenic	.	.	.	.	.	.	.	.	.
Barium	0.0304	0.0335	0.167	0.126	0.111	0.108	0.111	0.0457	0.0464
Beryllium	<	<	<	<	<	<	<	<	<
Boron	<	<	<	<	<	<	<	<	<
Cadmium (PMS)	<	<	<	<	<	<	<	<	<
Cadmium	.	.	.	.	.	.	.	.	.
Chromium (PMS)	0.00295	0.00289	0.0314	0.00485	<	<	<	0.00768	0.0123
Chromium	<	<	0.0283 J	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	0.0399	<	<
Iron	<	<	4.41	<	<	0.144	1.96	0.0913	<
Lead (PMS)	<	<	0.00536	<	<	<	<	<	<
Lead	.	.	.	.	.	.	.	.	.
Lithium	<	<	<	<	0.0312	0.0281	<	<	0.0106
Manganese	<	<	0.128	<	0.0594	0.0936	0.0908	<	<
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	0.0336	0.0103	<	<	<	<	<
Nickel	<	<	<	<	<	6.74 J	<	<	<
Selenium (PMS)	<	<	<	<	<	<	<	<	<
Strontium	0.0164	0.0177	0.165	0.17	0.146	0.154	0.134	0.0924	0.0979
Thallium (PMS)	<	<	<	<	<	<	<	<	<
Uranium (PMS)	<	<	0.058	0.0452	0.0362	0.0402	0.0105	0.00448	0.00598
Uranium (KPA)	.	.	.	.	.	.	.	.	.
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-703		GW-704		GW-706			GW-712	
Location	EXP-B		EXP-B		EXP-B			EXP-W	
Date Sampled	01/22/01	07/16/01	01/23/01	07/17/01	01/23/01		07/17/01	01/02/01	07/02/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	WRP	WRP
Sample Type					Dup				
FIELD MEASUREMENTS									
Time Sampled	10:20	13:10	10:20	13:15	13:45	13:45	10:25	14:35	10:40
Measuring Point Elev. (ft)	955.49	955.49	945.53	945.53	929.47	929.47	929.47	877.89	877.89
Depth to Water (ft)	41.19	46.32	29.51	37.89	11.16	11.16	19.56	35.11	35.90
Groundwater Elevation (ft)	914.30	909.17	916.02	907.64	918.31	918.31	909.91	842.78	841.99
Conductivity ($\mu\text{mho}/\text{cm}$)	870	709	817	379	1543	1543	888	332	487
Dissolved Oxygen (ppm)	-0.01	0.55	1.39	0.48	0.25	0.25	0.27	7.5	1.16
Oxidation/Reduction (mV)	169	151	165	-287	139	139	112	-158	-158
Temperature (degrees C)	11.8	15.7	12	14.6	13.5	13.5	14.7	10.2	15.6
Turbidity (NTU)	.	.	.	.	.	.	.	13	6
pH	7.54	7.05	7.55	8.06	7.47	7.47	7.15	7.92	7.66
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	672	682	702	369	1342	1367	850	.	.
Dissolved Solids (mg/L)	375	415	373	220	817	832	579	280	323
Suspended Solids (mg/L)	<	<	<	<	2	2	<	<	<
Turbidity (NTU)	1.37	3.54	1.84	7.42	2.39	2.64	2.38	.	.
pH	7.75	7.48	7.68	8.58	7.55	7.48	7.34	.	.
MAJOR IONS (mg/L)									
Calcium	70.9	73.8	78.4	12.5	177	181	114	49.8	53.5
Magnesium	31.3	31.7	31.5	26.4	34.1	34.6	22.5	31.7	32.1
Potassium	4.42	4.3	2.17	11.5	6.53	6.41	5.64	2.12	2.24
Sodium	12.3	12.3	14.6	12.9	28.9	29.4	16.6	9.22	8.81
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	222	230	230	122	266	266	240	168	180
Chloride	19.1	22.4	30.6	27.1	59.2	44.1	35.4	11.2	22.4
Fluoride	0.169	0.197	0.186	0.185	0.268	0.272	0.304	0.6	0.32
Nitrate as N	16.1	17.9	16	0.387	99.1	79.1	28.5	0.03	<
Sulfate	25.9	26.5	24.2	22.6	30.5	31.7	27	81	80.8
Charge balance	0.6	-1	0.5	-0.8	-5.9	1.7	0	1.4	-1.5
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	<	<	<	.	.
Arsenic	.	.	.	.	.	.	.	<	<
Barium	0.0849	0.0837	0.125	0.0382	0.246	0.251	0.157	0.0338	0.0362
Beryllium	<	<	<	<	<	<	<	<	<
Boron	<	<	<	<	0.132	0.133	0.11	0.0618	0.0584
Cadmium (PMS)	<	<	<	<	<	<	<	.	.
Cadmium	.	.	.	.	.	.	.	<	<
Chromium (PMS)	<	<	<	<	<	<	<	.	.
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.0905	0.378	0.226	0.721	0.459	1.02	0.158	0.732	0.494
Lead (PMS)	<	0.000762	<	<	<	<	<	.	.
Lead	.	.	.	.	.	.	.	<	<
Lithium	0.019	0.0207	0.0166	0.0249	0.0236	0.023	0.018	0.0115	0.0119
Manganese	0.0615	0.0908	0.0144	0.028	0.0636	0.0712	<	0.166	0.173
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	0.00554	0.00774	<	0.00733	0.00953	0.00955	<	.	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	<	<	<	<	<	.	.
Strontium	0.254	0.263	0.389	0.064	0.519	0.527	0.348	0.599	0.633
Thallium (PMS)	<	<	<	<	<	<	<	.	.
Uranium (PMS)	0.00519	0.00553	0.0106	0.00213	0.117	0.117	0.12	.	.
Uranium (KPA)	.	.	.	.	.	.	.	<	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-713		GW-714		GW-715			
Location	EXP-W		EXP-W		EXP-W			
Date Sampled	01/03/01	07/10/01	01/02/01	07/02/01	01/02/01		07/09/01	
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type					Dup		Dup	
FIELD MEASUREMENTS								
Time Sampled	10:40	10:20	14:35	10:30	9:55	.	9:50	.
Measuring Point Elev. (ft)	881.43	881.43	875.88	875.88	874.92	.	874.92	.
Depth to Water (ft)	38.41	38.74	30.96	31.37	28.99	.	27.58	.
Groundwater Elevation (ft)	843.02	842.69	844.92	844.51	845.93	.	847.34	.
Conductivity ($\mu\text{mho}/\text{cm}$)	350	520	312	464	361	.	475	.
Dissolved Oxygen (ppm)	11.25	2.21	10.91	4.57	8.56	.	3.63	.
Oxidation/Reduction (mV)	-166	-165	188	53	54	.	183	.
Temperature (degrees C)	7.5	16.9	7.3	20	9.7	.	18.2	.
Turbidity (NTU)	28	27	35	41	9	.	27	.
pH	7.93	8	7.92	7.49	6.75	.	6.31	.
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	.							
Dissolved Solids (mg/L)	340	352	250	324	260	260	250	210
Suspended Solids (mg/L)	<	8.8	<	<	<	<	<	<
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	62	63.9	57.4	59.2	65	63.6	59.2	61.9
Magnesium	32.9	33.3	24.3	24.5	13.6	13.3	9.96	10.3
Potassium	2.67	2.99	1.75	1.89	1.65	1.61	1.5	1.54
Sodium	11.8	12.2	4.76	5.04	13.1	12.8	17.2	17.8
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	178	188	200	192	200	190	174	176
Chloride	16.3	13.6	11.2	12.9	23.1	23.2	29.8	30.4
Fluoride	0.61	0.43	0.43	0.32	<	<	<	<
Nitrate as N	0.33	0.061	3.7	1.8	3.3	3.3	1.4	1.4
Sulfate	100	93.3	35.1	36	13	13.1	12.2	12.5
Charge balance	1.8	3.3	-2.1	1.4	-1.8	.	-1.2	.
TRACE METALS (mg/L)								
Aluminum	<	<	<	<	<	<	<	<
Arsenic (PMS)	.	.	.	.	.	.	.	.
Arsenic	<	<	<	<	<	<	<	<
Barium	0.0416	0.0422	0.0645	0.0665	0.0648	0.0633	0.0594	0.0612
Beryllium	<	<	<	<	<	<	<	<
Boron	0.067	0.0657	0.0567	0.0557	0.0411	0.0396	0.0217	0.0223
Cadmium (PMS)	.	.	.	.	.	.	.	.
Cadmium	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	0.121	0.171	0.018	0.0205
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	3.63	3.58	2.41	0.871	0.701	0.632	0.149	0.151
Lead (PMS)	.	.	.	.	.	.	.	.
Lead	<	<	<	<	<	<	<	<
Lithium	0.0147	0.0155	<	<	<	<	<	<
Manganese	0.107	0.125	0.015	0.0143	0.0165	0.0137	0.0066	0.0066
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	0.233	0.208	0.0429	0.0446
Selenium (PMS)	.	.	.	.	.	.	.	.
Strontium	1.35	1.32	0.239	0.247	0.0871	0.085	0.0722	0.0747
Thallium (PMS)	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	0.0166	0.0162	0.00938	0.00861
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-724		GW-725		GW-738		GW-740		
Location	EXP-C		EXP-C		EXP-C		EXP-C		
Date Sampled	01/25/01	07/19/01	01/22/01	07/19/01	01/24/01	07/18/01	01/24/01	07/18/01	
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type									Dup
FIELD MEASUREMENTS									
Time Sampled	13:15	10:20	13:50	11:25	13:35	9:10	10:15	10:15	10:15
Measuring Point Elev. (ft)	979.27	979.27	961.05	961.05	983.08	983.08	1020.43	1020.43	1020.43
Depth to Water (ft)	28.59	33.18	9.19	13.97	28.54	31.51	69.45	73.97	73.97
Groundwater Elevation (ft)	950.68	946.09	951.86	947.08	954.54	951.57	950.98	946.46	946.46
Conductivity ($\mu\text{mho}/\text{cm}$)	1086	981	1323	1089	1021	875	672	568	568
Dissolved Oxygen (ppm)	1.24	0.96	0.1	0.22	0.27	1.14	4.31	2.81	2.81
Oxidation/Reduction (mV)	159	45	103	41	143	214	175	185	185
Temperature (degrees C)	13.1	15.2	14	15.1	13.4	15.5	11.6	14.6	14.6
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	7.49	7	7.03	6.75	7.1	6.7	7.27	7.07	7.07
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	938	959	1084	1063	870	830	558	542	544
Dissolved Solids (mg/L)	554	541	642	685	497	485	303	313	312
Suspended Solids (mg/L)	<	1	3	3	<	<	2	<	<
Turbidity (NTU)	1.24	2.53	13.1	19.8	0.468	0.683	3.41	1.19	1.23
pH	7.39	7.35	7.28	6.98	7.19	7.26	7.5	7.6	7.6
MAJOR IONS (mg/L)									
Calcium	92.7	99.9	156	159	128	132	65.1	64.8	66.1
Magnesium	39.2	40.8	23.4	24	23.2	25.9	31	30.5	31.1
Potassium	2.15	2.29	3.02	3.02	2.37	2.37	<	<	<
Sodium	27.8	31.2	28.5	29.1	8.59	8	1.87	1.77	1.8
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	252	226	324	324	324	348	270	260	262
Chloride	77.4	84.3	77.7	73.6	23.2	19.7	6.3	6.59	6.5
Fluoride	0.224	0.251	0.231	0.266	<	<	0.187	0.206	0.208
Nitrate as N	23.9	25.9	18.1	18.9	19.7	13.8	2.39	2.34	2.41
Sulfate	28.5	29.8	39.7	42.6	32.5	29.7	11.7	12.1	12.1
Charge balance	-2.2	2	1	2	-2.7	0.1	-1	0.1	0.7
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	<	<	<	<	<
Arsenic	.	.	.	.	.	.	.	.	.
Barium	0.172	0.185	0.219	0.223	0.0592	0.0541	0.0876	0.0901	0.0883
Beryllium	<	<	<	<	<	<	<	<	<
Boron	<	<	<	<	<	<	<	<	<
Cadmium (PMS)	<	<	<	<	<	<	<	<	<
Cadmium	.	.	.	.	.	.	.	.	.
Chromium (PMS)	<	<	<	<	<	<	<	<	<
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.29	0.695	2.6	2.63	<	0.0612	0.731	0.114	0.178
Lead (PMS)	<	<	<	0.00556	<	<	<	<	<
Lead	.	.	.	.	.	.	.	.	.
Lithium	0.0177	0.0177	<	<	<	<	0.0149	0.0147	0.0145
Manganese	0.0333	0.0135	0.946	0.912	<	<	<	<	<
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	0.00718	<	<	<	<	<	0.0141
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	<	<	<	<	<	<	<
Strontium	1.23	1.3	0.362	0.371	0.135	0.131	0.0543	0.0536	0.0546
Thallium (PMS)	<	<	<	0.000525	<	<	<	<	<
Uranium (PMS)	0.000582	0.000752	0.0101	0.0111	0.00243	0.00212	<	<	<
Uranium (KPA)	.	.	.	.	.	.	.	.	.
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-829			GW-835		
Location	OLF			S3		
Date Sampled	01/29/01	08/01/01	02/06/01	05/16/01	08/09/01	11/14/01
Program	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP
Sample Type						
FIELD MEASUREMENTS						
Time Sampled	13:30	10:25	9:30	10:08	14:25	9:51
Measuring Point Elev. (ft)	985.98	985.98	1000.91	1000.91	1000.91	1000.91
Depth to Water (ft)	14.83	14.34	15.27	15.50	15.40	15.70
Groundwater Elevation (ft)	971.15	971.64	985.64	985.41	985.51	985.21
Conductivity ($\mu\text{mho}/\text{cm}$)	665	595	996	884	955	1162
Dissolved Oxygen (ppm)	0.72	1.89	4.85	5.49	4.54	6.49
Oxidation/Reduction (mV)	96	127	225	186	136	126
Temperature (degrees C)	15.2	17.5	14.7	17.8	20.9	18
Turbidity (NTU)	.	.	4	23	13	19
pH	9.05	8.63	6.7	6.67	6.55	6.47
MISCELLANEOUS						
Conductivity ($\mu\text{mho}/\text{cm}$)	570	574	.	.	.	.
Dissolved Solids (mg/L)	374	360	.	.	.	.
Suspended Solids (mg/L)	<	<	.	.	.	.
Turbidity (NTU)	0.653	0.702	.	.	.	.
pH	8.8	8.91	.	.	.	.
MAJOR IONS (mg/L)						
Calcium	12	11.3	145	161	149	158
Magnesium	4.32	4.06	26.9	27.7	26.2	27.2
Potassium	4.32	4.26	6.45	6.16	5.41	6.84
Sodium	107	107	32.3	21.8	21.6	20
Alkalinity as CO ₃	<	21.8	<	<	<	4
Alkalinity as HCO ₃	165	186	360	290	308	344
Chloride	2.6	2.3	45.4	28.8	21.4	15.9
Fluoride	0.483	0.486	0.54	0.58	0.46	0.52
Nitrate as N	20.1	17	12.1	20	19.2	15.8
Sulfate	16.2	17.6	70.6	123	96.7	91.2
Charge balance	4.9	-1.4	0.8	3.6	2.4	3.3
TRACE METALS (mg/L)						
Aluminum	<	<	0.0516	0.054	<	0.0888
Arsenic (PMS)	<	<	.	.	.	.
Arsenic	.	.	<	<	<	.
Barium	0.396	0.391	0.0899	0.0821	0.0772	0.0783
Beryllium	<	<	<	<	<	.
Boron	0.252	0.253	0.0639	0.0622	0.07	0.084
Cadmium (PMS)	<	<	.	.	.	.
Cadmium	.	.	0.0038	0.005	0.0038	0.0049
Chromium (PMS)	0.00531	0.00378	.	.	.	.
Chromium	<	<	<	<	<	.
Cobalt	<	<	<	<	<	.
Copper	<	<	<	<	<	.
Iron	0.127	<	<	<	<	.
Lead (PMS)	0.00051	<	.	.	.	.
Lead	.	.	<	<	<	.
Lithium	0.0508	0.0501	0.0269	0.0239	<	0.0279
Manganese	<	<	2.16	2.05	2.1	2.08
Mercury (CVAA)	<	<	.	.	.	.
Nickel (PMS)	<	<	.	.	.	.
Nickel	<	<	<	<	<	.
Selenium (PMS)	<	<	.	.	.	.
Strontium	0.717	0.692	0.412	0.416	0.426	0.45
Thallium (PMS)	<	<	.	.	.	.
Uranium (PMS)	0.0674	0.00156	.	.	.	.
Uranium (KPA)	.	.	0.731	1.92	1.61	1.36
Vanadium	<	<	<	<	<	.
Zinc	<	<	<	<	<	.

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-916							
Location	EMWMF							
Date Sampled	04/02/01		05/30/01		08/22/01		12/03/01	
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup	Dup	Dup	Dup	Dup	Dup	Dup	Dup
FIELD MEASUREMENTS								
Time Sampled	10:40		14:45		10:37		10:15	
Measuring Point Elev. (ft)	1,002.85		1,002.85		1,002.85		1,002.85	
Depth to Water (ft)	6.30		6.38		6.58		6.34	
Groundwater Elevation (ft)	996.55		996.47		996.27		996.51	
Conductivity ($\mu\text{mho}/\text{cm}$)	414		375		1086		383	
Dissolved Oxygen (ppm)	3.52		3.85		7.88		2.71	
Oxidation/Reduction (mV)	145		108		233		209	
Temperature (degrees C)	12.1		15.1		16.2		15.4	
Turbidity (NTU)	78		74		29		47	
pH	7.5		6.98		6.74		7.4	
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)								
Dissolved Solids (mg/L)	257	260	235	234	248	258	246	224
Suspended Solids (mg/L)	19.2	20.3	51.1	51.4	17.4	20.9	18.4	26.1
Turbidity (NTU)								
pH								
MAJOR IONS (mg/L)								
Calcium	43.5	42.1	39.7	39.1	42.9	41.4	37	36.2
Magnesium	6.26	6.04	6.06	6.06	6.48	6.26	5.76	5.6
Potassium	4.17	4.03	4.4	4.34	3.94	3.78	3.64	3.52
Sodium	34.7	32.6	30.9	29.6	35	33.9	29.6	24.5
Alkalinity as CO ₃	<	<	<	<	<	<	<	4
Alkalinity as HCO ₃	178	170	160	162	176	178	174	162
Chloride	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.7
Fluoride	<	<	0.12	0.12	0.1	<	<	<
Nitrate as N	0.19	0.19	0.035	0.037	0.05	0.06	0.037	0.069
Sulfate	31.2	31.4	18.6	18.7	27.6	27.7	21.1	21.4
Charge balance	0.5		4		1.8		-3.4	
TRACE METALS (mg/L)								
Aluminum	0.696	0.728	1.87	1.87	0.21	0.169	0.727	0.512
Arsenic (PMS)								
Arsenic	<	<	<	<	<	<	<	<
Barium	0.196	0.188	0.163	0.158	0.177	0.17	0.132	0.128
Beryllium	<	<	<	<	<	<	<	<
Boron	0.0555	0.053	0.0692	0.0682	0.0656	0.062	0.0643	0.062
Cadmium (PMS)								
Cadmium	<	<	<	<	<	<	<	<
Chromium (PMS)								
Chromium	<	<	0.0065	0.0071	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	0.883	0.908	2.29	2.33	0.221	0.203	0.842	0.63
Lead (PMS)								
Lead	<	<	<	<	<	<	<	<
Lithium	0.0291	0.0273	0.0395	0.0399	0.0591	0.0572	0.0657	0.0644
Manganese	0.146	0.142	0.163	0.159	0.115	0.112	0.0947	0.093
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)								
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)								
Strontium	0.774	0.737	0.848	0.86	0.953	0.916	0.967	0.943
Thallium (PMS)								
Uranium (PMS)								
Uranium (KPA)	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<
Zinc	0.0205	0.013	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-917				GW-918			
Location	EMWMF				EMWMF			
Date Sampled	04/03/01	06/04/01	08/23/01	12/05/01	04/02/01	05/30/01	08/23/01	12/03/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	14:45	9:52	9:21	9:19	10:30	10:18	9:08	14:06
Measuring Point Elev. (ft)	997.10	997.10	997.10	997.10	1067.96	1067.96	1067.96	1067.96
Depth to Water (ft)	17.50	19.58	20.87	22.18	5.95	5.70	6.13	5.81
Groundwater Elevation (ft)	979.60	977.52	976.23	974.92	1062.01	1062.26	1061.83	1062.15
Conductivity ($\mu\text{mho}/\text{cm}$)	410	424	398	506	1091	112	116	116
Dissolved Oxygen (ppm)	7.2	5.07	2.77	2.5	6.36	5.7	6.7	5.99
Oxidation/Reduction (mV)	155	83	151	191	308	173	214	234
Temperature (degrees C)	15.3	16.2	17	16	12.9	14.3	16.6	15.5
Turbidity (NTU)	27	65	57	19	164	80	86	29
pH	5.85	7.45	6.32	6.9	5.66	5.61	6.64	6.1
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	266	261	285	269	315	112	123	117
Suspended Solids (mg/L)	26.2	88.8	9.3	9.9	212	666	28.3	10.9
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	65.3	61.3	64.7	65.1	9.04	9.53	10.2	10
Magnesium	8.9	8.58	8.82	8.73	4.1	3.95	4.26	4.1
Potassium	1.69	1.7	1.6	1.47	2.72	2.14	2.13	2.07
Sodium	8.85	9.62	9.42	9.06	4.02	4.94	4.8	4.58
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	199	206	194	196	42	44	46	54
Chloride	1.1	1.6	1.8	1.9	1.2	1.3	1.3	1.5
Fluoride	<	0.1	<	<	<	<	<	<
Nitrate as N	0.4	<	0.99	0.12	<	<	<	0.17
Sulfate	15	14.7	13.8	13.4	4.7	4.5	4.3	4.5
Charge balance	0.8	-2.8	1.4	1.6	3.2	3	3.6	-6
TRACE METALS (mg/L)								
Aluminum	1.13	1.51	0.63	0.551	8.43	0.745	1.42	1.07
Arsenic (PMS)	.	.	.	.	.	.	.	.
Arsenic	<	<	<	<	<	<	<	<
Barium	0.196	0.191	0.178	0.181	0.268	0.127	0.143	0.133
Beryllium	<	<	<	<	<	<	<	<
Boron	0.0106	0.0114	0.0121	0.0109	<	<	<	<
Cadmium (PMS)	.	.	.	.	.	.	.	.
Cadmium	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	0.0054	<	<	<	0.0098	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	0.0088	<	<	<	0.0076	<	<	<
Iron	1.54	2.32	0.602	0.773	11	0.93	2.15	1.56
Lead (PMS)	.	.	.	.	.	.	.	.
Lead	<	<	<	<	0.007	<	<	<
Lithium	0.0179	0.0178	0.0177	0.0188	0.0239	0.0148	0.0152	0.0154
Manganese	0.125	0.23	0.076	0.0561	0.3	0.0476	0.0822	0.0411
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	.	.	.	.	.	.	.	.
Strontium	0.129	0.123	0.129	0.131	0.0507	0.0504	0.0511	0.0519
Thallium (PMS)	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	0.0142	<	<	<
Zinc	<	<	<	<	0.0266	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-919	GW-920				GW-921			
Location	EMWMF	EMWMF				EMWMF			
Date Sampled	12/04/01	04/04/01	06/11/01	08/23/01	12/04/01	04/03/01	05/31/01	08/27/01	11/27/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	13:20	14:15	13:57	12:15	9:20	10:10	12:25	9:18	9:33
Measuring Point Elev. (ft)	990.52	967.43	967.43	967.43	967.43	971.29	971.29	971.29	971.29
Depth to Water (ft)	3.72	6.00	6.95	9.08	10.91	9.50	10.04	8.23	7.17
Groundwater Elevation (ft)	986.80	961.43	960.48	958.35	956.52	961.79	961.25	963.06	964.12
Conductivity ($\mu\text{mho}/\text{cm}$)	590	333	336	376	352	379	379	364	369
Dissolved Oxygen (ppm)	1.8	1.38	7.64	1.41	2.45	8.29	4.32	1.1	2.01
Oxidation/Reduction (mV)	41	-95	-23	-15	151	15	-45	21	-25
Temperature (degrees C)	16.9	15.4	16.8	17.2	14.3	14.1	16.5	17.3	16.1
Turbidity (NTU)	5	30	13	16	24	30	14	17	14
pH	7.39	7.68	7.43	7.8	7.15	7.54	7.4	6.77	7.13
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	311	224	213	212	218	270	231	223	227
Dissolved Solids (mg/L)	5.2	<	<	5	<	24.6	<	<	<
Suspended Solids (mg/L)	.	.	.	.	.	.	.	.	.
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)									
Calcium	65.8	50.3	50.9	49.5	49.6	43.9	43.2	42.6	43.2
Magnesium	7.83	7.91	8.25	8.43	8.45	12.6	12.8	12.9	12.8
Potassium	1.88	1.57	1.77	1.79	1.78	2.8	2.95	2.9	2.86
Sodium	16.3	5.38	5.86	6.05	5.85	14.2	15.2	16.1	15.5
Alkalinity as CO ₃	<	<	<	<	2	<	<	<	<
Alkalinity as HCO ₃	208	154	164	160	160	186	184	198	186
Chloride	2.5	1.3	1.4	1.8	1.5	1.1	1.2	1.5	1.4
Fluoride	0.11	<	<	<	<	<	<	<	<
Nitrate as N	<	<	2	<	0.025	<	<	0.18	<
Sulfate	22.2	9.3	9.4	8.1	8.7	10.8	10.4	10.2	10.5
Charge balance	-0.1	1.9	-1.9	0.8	0.1	-0.7	0.2	-3.2	-0.2
TRACE METALS (mg/L)									
Aluminum	0.732	<	<	<	<	<	<	<	<
Arsenic (PMS)	.	.	.	.	.	.	.	.	.
Arsenic	<	<	<	<	<	<	<	<	<
Barium	0.156	0.232	0.248	0.262	0.262	0.234	0.235	0.238	0.24
Beryllium	<	<	<	<	<	<	<	<	<
Boron	0.0256	0.0128	0.014	0.0163	0.0158	0.0538	0.0568	0.0611	0.0608
Cadmium (PMS)	.	.	.	.	.	.	.	.	.
Cadmium	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.513	0.205	0.246	0.224	0.183	0.728	0.324	0.129	0.146
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lead	<	<	<	<	<	<	<	<	<
Lithium	0.028	0.0101	0.0103	0.0107	0.0111	0.0182	0.0193	0.0203	0.0212
Manganese	0.259	0.0425	0.0374	0.0316	0.0346	0.0158	0.0112	0.0103	0.0107
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	.	.	.	.	.	.	.	.	.
Strontium	0.266	0.4	0.428	0.471	0.488	1.19	1.2	1.22	1.23
Thallium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-922				GW-923			
	EMWMF				EMWMF			
Date Sampled	04/04/01	06/11/01	08/23/01	12/04/01	04/02/01	06/06/01	08/27/01	12/03/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	15:13	10:45	12:42	9:08	15:30	9:30	14:20	19:55
Measuring Point Elev. (ft)	956.91	956.91	956.91	956.91	1,016.73	1,016.73	1,016.73	1,016.73
Depth to Water (ft)	4.40	5.73	6.20	5.88	65.00	44.35	31.15	31.53
Groundwater Elevation (ft)	952.51	951.18	950.71	951.03	951.73	972.38	985.58	985.20
Conductivity ($\mu\text{mho}/\text{cm}$)	336	341	322	333	571	392	565	440
Dissolved Oxygen (ppm)	3.69	11.2	2.11	2.84	1.85	6.13	2.93	5.74
Oxidation/Reduction (mV)	-18	47	117	144	137	164	147	192
Temperature (degrees C)	14.4	15.8	16.9	14.8	14.4	19.2	22.5	11.7
Turbidity (NTU)	54	16	11	7	41	480	42	72
pH	7.64	7.49	7.33	7.58	7.23	6.8	7.47	7.26
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	133	199	214	200	321	2780	344	245
Suspended Solids (mg/L)	179	<	6	5	9.1	485	30.2	55.3
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	49.8	46.1	46.7	42.6	62.5	45.4	73.7	54.4
Magnesium	11.8	10	9.75	10.7	10.9	12.2	12.1	7.22
Potassium	4.93	2.88	2.66	3.47	2.1	5.82	2.37	1.65
Sodium	8.52	8.03	8.03	9.93	15.6	22.7	18.2	9.65
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	164	170	164	158	204	132	232	166
Chloride	0.98	2.1	2.7	1.1	2.2	4.7	3.3	2.1
Fluoride	<	<	<	<	<	0.18	0.13	0.12
Nitrate as N	<	<	0.06	<	0.62	0.17	0.14	0.15
Sulfate	4.7	4.4	4.5	4.6	30.7	43.8	48.1	29.6
Charge balance	7.5	0	1.4	3.6	-0.8	8.6	-2	-3.1
TRACE METALS (mg/L)								
Aluminum	5.97	<	<	0.3	0.342	35.4	0.564	1.08
Arsenic (PMS)	.	.	.	.	.	.	.	.
Arsenic	<	<	<	<	<	0.0095	<	<
Barium	0.69	0.682	0.673	0.713	0.0651	1.07	0.117	0.099
Beryllium	<	<	<	<	<	0.0025	<	<
Boron	0.0365	0.026	0.027	0.0454	0.0135	0.0171	0.0158	0.013
Cadmium (PMS)	.	.	.	.	.	.	.	.
Cadmium	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	0.012	<	<	<	0.0063	0.0414	<	0.0053
Cobalt	0.0051	<	<	<	<	0.0204	<	<
Copper	0.0065	<	<	<	0.0101	0.0884	0.0066	0.0075
Iron	8.05	0.0949	0.0728	0.473	0.47	34.2	0.666	1.29
Lead (PMS)	.	.	.	.	.	.	.	.
Lead	<	<	<	<	<	0.04	<	<
Lithium	0.0213	0.0112	0.0118	0.0156	<	0.0334	<	<
Manganese	0.215	0.0388	0.0316	0.0209	0.191	1.12	0.261	0.0917
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	0.0138	<	<	<	<	0.049	<	<
Selenium (PMS)	.	.	.	.	.	.	.	.
Strontium	0.703	0.814	0.759	0.933	0.138	0.213	0.16	0.11
Thallium (PMS)	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	0.007	0.0114	0.012	<
Vanadium	<	<	<	<	<	0.0303	<	<
Zinc	0.0323	<	<	<	0.0183	0.0838	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-924			GW-925				GW-926	
Location	EMWMF			EMWMF				EMWMF	
Date Sampled	06/05/01	08/28/01	12/05/01	04/03/01	05/31/01	08/27/01	11/28/01	04/02/01	06/05/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	9:43	13:49	13:59	11:20	12:35	11:10	14:05	16:05	14:04
Measuring Point Elev. (ft)	968.90	968.90	968.90	971.14	971.14	971.14	971.14	968.94	968.94
Depth to Water (ft)	11.10	12.96	13.30	4.30	5.78	3.35	2.84	4.43	9.20
Groundwater Elevation (ft)	957.80	955.94	955.60	966.84	965.36	967.79	968.30	964.51	959.74
Conductivity ($\mu\text{mho}/\text{cm}$)	17 R	323	355	538	673	625	642	346	333
Dissolved Oxygen (ppm)	5.88	1.48	1.31	1.62	4.37	0.68	1.84	4.98	5.5
Oxidation/Reduction (mV)	-21	-16	41	188	133	99	104	-70	-92
Temperature (degrees C)	15.9	18.1	16.7	14.4	19.3	19.1	16.3	15.1	17.4
Turbidity (NTU)	16	29	18	150	65	165	63	19	17
pH	7.31	7.5	7.38	8.33	8.38	8.77	8.35	7.23	7.7
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	200	183	216	531	514	432	532	213	206
Dissolved Solids (mg/L)	<	<	<	91.4	16.5	14.8	12.5	<	17.8
Suspended Solids (mg/L)	.	.	.	.	.	.	.	.	.
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)									
Calcium	51.8	53.4	54.7	8.98	3.71	4.37	4.29	44.4	42.3
Magnesium	4.88	4.96	4.93	2.45	1.38	1.32	1.6	10.9	10.4
Potassium	1.03	0.929	0.878	4.42	3.29	2.73	3.37	2.45	2.41
Sodium	8.51	6.82	6.07	140	140	12 Q	156	9.74	9.83
Alkalinity as CO ₃	<	<	<	12	8	24	16	<	<
Alkalinity as HCO ₃	163	148	156	276	276	256	298	162	162
Chloride	1.1	1.1	1.3	1.7	1.7	1.7	2.1	0.9	0.96
Fluoride	<	<	<	0.7	1.2	0.67	1.1	<	<
Nitrate as N	0.024	0.044	0.051	0.03	0.029	0.026	0.021	0.078	0.17
Sulfate	9.7	8.2	7.8	40.9	37.3	35.1	34	10.5	10.5
Charge balance	-1.6	3.5	1.5	1.2	-0.7	-1.9	0.8	1.6	-0.6
TRACE METALS (mg/L)									
Aluminum	<	<	<	5.23	2.48	1.46	2.98	0.18	0.0857
Arsenic (PMS)	.	.	.	.	.	.	.	.	.
Arsenic	<	<	<	0.0062	0.0064	<	<	<	<
Barium	0.246	0.248	0.263	0.14	0.112	0.0878	0.135	0.186	0.188
Beryllium	<	<	<	<	<	<	<	<	<
Boron	<	<	<	0.166	0.195	0.164	0.223	0.0219	0.0218
Cadmium (PMS)	.	.	.	.	.	.	.	.	.
Cadmium	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	0.0145	0.0071	0.0063	0.0106	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	0.0414	0.0327	0.0255	0.0416	<	<
Iron	0.128	0.114	0.107	3.36	1.37	1.05	1.72	0.467	0.359
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lead	<	<	<	0.0056	<	0.003	0.0247	<	<
Lithium	<	0.0104	0.0112	0.0176	0.0221	0.022	0.0359	<	<
Manganese	0.0691	0.0581	0.0592	0.117	0.0586	0.0431	0.0353	0.0288	0.0233
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	0.0177	0.0184	0.0102	0.0137	<	<
Selenium (PMS)	.	.	.	.	.	.	.	.	.
Strontium	0.107	0.105	0.107	0.184	0.149	0.159	0.194	0.679	0.659
Thallium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	0.00442	0.0166 Q	0.00513	<	<
Vanadium	<	<	<	0.0117	<	<	0.0139	<	<
Zinc	<	<	<	0.0214	<	<	<	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-926			GW-927			NT-01		NT-03
Location	EMWMF		EMWMF			EXP-SW		EXP-SW	
Date Sampled	08/27/01	11/29/01	04/03/01	05/30/01	08/22/01	12/05/01	01/10/01	07/12/01	03/21/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	14:50	13:15	14:41	13:24	11:19	9:44	13:30	10:20	13:55
Measuring Point Elev. (ft)	968.94	968.94	997.19	997.19	997.19	997.19	.	.	.
Depth to Water (ft)	10.22	11.11	11.50	14.35	16.38	16.95	.	.	.
Groundwater Elevation (ft)	958.72	957.83	985.69	982.84	980.81	980.24	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	326	336	294	349	353	356	1240	8440	154
Dissolved Oxygen (ppm)	1.3	1.6	6.19	6.62	1.82	0.87	7.7	3.35	17.03
Oxidation/Reduction (mV)	-44	-19	117	95	8	25	200	209	120
Temperature (degrees C)	16.7	15.8	14.9	17.8	18.2	15.2	2.8	21.8	9.6
Turbidity (NTU)	11	24	38	20	17	9	.	.	15
pH	7.48	7.49	5.81	7.98	7.81	7.56	7.52	6.58	8.31
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	1344	8690	.
Dissolved Solids (mg/L)	217	210	212	210	238	227	970	6920	.
Suspended Solids (mg/L)	5	<	<	8.8	<	<	7	2	.
Turbidity (NTU)	.	.	.	.	.	.	4.35	4.07	.
pH	.	.	.	.	.	.	7.42	6.54	.
MAJOR IONS (mg/L)									
Calcium	44	42.5	57.8	57.6	58.4	57.8	198	1340	49.6
Magnesium	10.9	10.7	5.82	5.77	5.86	5.72	25.4	165	8.65
Potassium	2.3	2.15	1.01	0.977	0.936	0.857	4.19	21.6	2.72
Sodium	9.76	10.6	8.34	7.28	7.18	6.6	59.6	179	3.84
Alkalinity as CO ₃	<	6	<	<	<	<	<	<	<
Alkalinity as HCO ₃	158	158	160	159	164	166	214	264	108
Chloride	1.4	0.97	1.1	1.2	2	1.6	121	95.7	2.6
Fluoride	<	<	<	0.11	<	<	0.94	4.12	0.94
Nitrate as N	0.2	0.32	1.6	<	<	<	81.7	1110	<
Sulfate	10	10.2	12.4	10.7	11.2	10.3	45.7	46.4	50.6
Charge balance	2.2	-0.3	2.1	3.5	2.3	1.2	0.5	0.2	1.3
TRACE METALS (mg/L)									
Aluminum	0.148	0.0682	0.0769	0.0779	0.054	0.075	0.857	1.53	0.0779
Arsenic (PMS)	.	.	.	.	.	.	<	<	.
Arsenic	<	<	<	<	<	<	.	.	.
Barium	0.196	0.202	0.196	0.204	0.207	0.2	0.365	3.62	0.0493
Beryllium	<	<	<	<	<	<	<	<	.
Boron	0.0236	0.0231	<	<	<	<	<	<	0.0812
Cadmium (PMS)	.	.	.	.	.	.	0.0199	0.189	.
Cadmium	<	<	<	<	<	<	.	.	.
Chromium (PMS)	.	.	.	.	.	.	<	<	.
Chromium	<	<	<	<	<	<	<	<	.
Cobalt	<	<	<	<	<	<	<	<	.
Copper	<	<	<	<	<	<	<	<	.
Iron	0.362	0.268	0.17	0.163	0.0973	0.18	0.132	<	0.256
Lead (PMS)	.	.	.	.	.	.	<	<	.
Lead	<	<	<	<	<	<	.	.	.
Lithium	0.0115	0.0118	0.016	0.0159	0.0164	0.0161	<	<	0.0942
Manganese	0.0187	0.0173	0.0273	0.0211	0.0177	0.0215	3.84	39	0.0502
Mercury (CVAA)	<	<	<	<	<	<	<	<	.
Nickel (PMS)	.	.	.	.	.	.	0.0839	0.683	.
Nickel	<	<	<	<	<	<	0.0802 J	0.696 J	<
Selenium (PMS)	.	.	.	.	.	.	<	<	.
Strontium	0.682	0.726	0.108	0.102	0.102	0.0989	0.533	4.23	0.233
Thallium (PMS)	.	.	.	.	.	.	<	<	.
Uranium (PMS)	.	.	.	.	.	.	0.254	0.117	.
Uranium (KPA)	<	<	<	<	<	<	<	<	.
Vanadium	<	<	<	<	<	<	<	<	.
Zinc	<	<	<	<	<	<	0.0775	<	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	NT-07		NT-08		NT-8-E		NT-8-W		S07
Location	EXP-SW		EXP-SW		EXP-SW		EXP-SW		EXP-SW
Date Sampled	03/22/01	09/18/01	03/22/01	09/18/01	03/22/01	09/18/01	03/22/01	09/18/01	09/17/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	9:20	8:46	9:41	8:30	10:25	9:11	10:08	9:14	12:57
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	247	258	141	215	189	126	52	134	197
Dissolved Oxygen (ppm)	10.27	9.64	11.12	10.11	10.4	8.21	11.01	9.13	10.42
Oxidation/Reduction (mV)	170	155	150	150	10	.	60	.	85
Temperature (degrees C)	8.7	16.1	8.4	16.4	10.2	15.8	8.9	16	17.4
Turbidity (NTU)	21	18	24	16	10	55	38	338	317
pH	8.86	8.25	8.7	8.63	8.3	8.02	8.85	7.38	7.95
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	157	348	117	192	201	148	121	187	.
Suspended Solids (mg/L)	<	11	<	5.6	<	139	<	120	.
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)									
Calcium	50.5	82.2	45	64.8	62.7	29.8	13	42.1	383
Magnesium	8.65	13.2	5.78	6.33	6.73	5.59	2.82	6.75	37
Potassium	2.25	3.5	1.65	2.54	2.4	1.75	1.48	2	4.4
Sodium	5.87	9.08	4.41	5.35	3.69	4.59	3.26	5.59	23
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	130	204	110	178	170	104	37	154	184
Chloride	16.1	61	8.1	13.8	5.3	7.3	5.5	7.3	19.8
Fluoride	<	<	0.11	<	0.26	<	<	<	<
Nitrate as N	0.064	0.031	2.3	0.063	0.1	0.038	<	0.033	276
Sulfate	18.4	12	11.7	7.6	16	0.4	6.5	1	8
Charge balance	1.4	-3.2	1.9	-0.8	0	-2.3	1.1	-5.7	-1.8
TRACE METALS (mg/L)									
Aluminum	0.058	0.868	0.0766	0.186	0.0588	0.316	0.0723	0.251	0.0724
Arsenic (PMS)	.	.	.	.	.	.	.	.	.
Arsenic	<	<	<	<	<	0.009	<	0.007	<
Barium	0.0407	0.0716	0.0639	0.0962	0.0782	0.177	0.034	0.233	0.832
Beryllium	<	<	<	<	<	<	<	<	<
Boron	0.309	0.487	0.562	1	1.81	1.32	0.904	1.28	0.0158
Cadmium (PMS)	.	.	.	.	.	.	.	.	.
Cadmium	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	0.0098	<	0.0128	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.0788	1.76	0.227	0.6	0.533	49.6	0.644	47.7	0.126
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lead	<	<	<	<	<	<	<	<	<
Lithium	0.0716	0.0633	0.128	0.133	0.709	0.0466	0.0629	0.0459	0.0161
Manganese	0.008	0.319	0.149	0.269	0.197	6.76	0.184	9.58	0.0199
Mercury (CVAA)	.	.	.	.	.	.	.	.	.
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	.	.	.	.	.	.	.	.	.
Strontium	0.113	0.175	0.103	0.151	0.112	0.107	0.0448	0.151	1.14
Thallium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	0.0213	0.0275	0.315	0.271	0.0247	0.00597	0.022	0.0465	.
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	0.0135	<	<	<	<	<	0.215	<

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	SS-1		SS-4			SS-5		SS-6.6		
Location	EXP-SW		EXP-SW			EXP-SW		EXP-SW		
Date Sampled	01/10/01	07/12/01	01/11/01		07/11/01	01/11/01	07/11/01	03/22/01		
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	WRP	WRP	
Sample Type			Dup				Dup			
FIELD MEASUREMENTS										
Time Sampled	13:00	10:00	10:45	10:45	10:15	10:30	9:30	12:35	.	
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	1173	1416	678	678	978	441	624	183	.	
Dissolved Oxygen (ppm)	7.28	4.35	4.75	4.75	2.42	4.17	3.93	8.52	.	
Oxidation/Reduction (mV)	190	211	189	189	255	183	216	100	.	
Temperature (degrees C)	8.6	19.8	9.7	9.7	16.2	10.9	15.7	14.5	.	
Turbidity (NTU)	.	.	.	.	.	.	.	101	.
pH	7.8	7.6	7.55	7.55	6.64	7.74	6.84	8.04	.	
MISCELLANEOUS										
Conductivity ($\mu\text{mho}/\text{cm}$)	1259	1370	1025	1026	955	668	587	.	.	
Dissolved Solids (mg/L)	781	1070	661	606	661	402	337	176	129	
Suspended Solids (mg/L)	1	22	<	<	31	<	<	<	6.4	
Turbidity (NTU)	0.854	10.1	1.61	1.63	1.13	1.38	2.61	.	.	
pH	7.92	7.73	7.18	7.21	7.2	7.46	7.37	.	.	
MAJOR IONS (mg/L)										
Calcium	192	226	135	137	128	90.9	79.8	50.6	49.8	
Magnesium	19.2	20.7	22.8	23.1	24.7	18.9	18.2	14.1	13.9	
Potassium	3.82	4.32	2.74	2.79	3.6	<	2.2	1.09	1.09	
Sodium	38.1	43.1	23.3	23.7	19.7	11.9	9.33	3.9	3.89	
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<	
Alkalinity as HCO ₃	338	364	214	214	256	187	206	169	140	
Chloride	122	149	42	42.3	37.7	22.9	17.9	6.1	6.1	
Fluoride	0.318	0.312	0.438	0.445	0.352	0.248	0.229	<	<	
Nitrate as N	17.4	23.5	45.2	47	40.9	20.8	14.9	0.49	0.49	
Sulfate	59.6	50.4	33	35.5	28	24.6	21.9	10	9.9	
Charge balance	0.9	2.5	1.6	1.3	-1.7	1.6	-1.8	1.2	.	
TRACE METALS (mg/L)										
Aluminum	<	2.65	<	<	1.36	<	<	0.055	0.0551	
Arsenic (PMS)	<	<	<	<	<	<	<	.	.	
Arsenic	.	.	.	.	.	.	.	<	<
Barium	0.0963	0.116	0.176	0.179	0.201	0.102	0.103	0.0456	0.0453	
Beryllium	<	<	<	<	<	<	<	<	<	
Boron	<	<	<	<	0.123	<	<	0.0146	0.0139	
Cadmium (PMS)	<	0.000622	<	<	0.00133	<	<	.	.	
Cadmium	.	.	.	.	.	.	.	<	<
Chromium (PMS)	<	<	<	<	<	<	<	.	.	
Chromium	<	<	<	<	<	<	<	<	<	
Cobalt	<	<	<	<	<	<	<	<	<	
Copper	<	<	<	<	<	<	<	<	<	
Iron	0.18	2.86	0.1	0.106	1.53	<	0.0621	0.165	0.158	
Lead (PMS)	0.000559	0.00786	<	<	0.0021	<	<	.	.	
Lead	.	.	.	.	.	.	.	<	<
Lithium	<	<	0.0133	0.014	0.0205	<	0.0104	<	<	
Manganese	0.0409	0.357	0.0295	0.0311	0.375	<	<	0.0076	0.0072	
Mercury (CVAA)	<	<	<	<	<	<	<	<	<	
Nickel (PMS)	0.00528	0.0169	0.00816	0.00825	0.0138	<	<	.	.	
Nickel	<	<	<	<	<	<	<	<	<	
Selenium (PMS)	<	<	<	<	<	<	<	.	.	
Strontium	0.643	0.724	0.346	0.351	0.36	0.204	0.179	0.0626	0.062	
Thallium (PMS)	<	<	<	<	<	<	<	.	.	
Uranium (PMS)	0.0436	0.0425	0.152	0.157	0.101	0.107	0.0607	.	.	
Uranium (KPA)	.	.	.	.	.	.	.	<	<
Vanadium	<	<	<	<	<	<	<	<	<	
Zinc	<	<	<	<	<	<	<	0.0109	.	

APPENDIX D.1: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	SS-7		SS-8	
Location	EXP-SW		EXP-SW	
Date Sampled	03/22/01	09/18/01	03/22/01	09/18/01
Program	WRRP	WRRP	WRRP	WRRP
Sample Type				
FIELD MEASUREMENTS				
Time Sampled	13:18	13:02	13:12	12:55
Measuring Point Elev. (ft)	.	.	.	.
Depth to Water (ft)	.	.	.	.
Groundwater Elevation (ft)				
Conductivity ($\mu\text{mho}/\text{cm}$)	111	174	112	137
Dissolved Oxygen (ppm)	9.09	10.16	8.99	9.85
Oxidation/Reduction (mV)	110	45	110	55
Temperature (degrees C)	12.5	15.8	12.8	14.9
Turbidity (NTU)	14	24	53	72
pH	8.78	8.14	8.48	8.2
MISCELLANEOUS				
Conductivity ($\mu\text{mho}/\text{cm}$)				
Dissolved Solids (mg/L)	147	216	120	176
Suspended Solids (mg/L)	5	<	<	5.3
Turbidity (NTU)	.	.	.	.
pH	.	.	.	.
MAJOR IONS (mg/L)				
Calcium	26.6	46.4	32.2	46.1
Magnesium	13.4	17.3	9.46	13.8
Potassium	0.774	1.41	0.869	1.39
Sodium	2.43	5.1	2.29	2.32
Alkalinity as CO_3	<	<	<	<
Alkalinity as HCO_3	108	190	110	170
Chloride	3.6	9.3	3.2	3.8
Fluoride	<	<	<	<
Nitrate as N	0.16	1.7	0.3	0.4
Sulfate	4.2	10.3	3.4	3
Charge balance	3.9	-4.8	2.5	-0.3
TRACE METALS (mg/L)				
Aluminum	0.116	0.26	0.21	0.765
Arsenic (PMS)	.	.	.	.
Arsenic	<	<	<	<
Barium	0.0386	0.0643	0.0363	0.0589
Beryllium	<	<	<	<
Boron	<	0.0368	<	<
Cadmium (PMS)	.	.	.	.
Cadmium	<	<	<	<
Chromium (PMS)	.	.	.	.
Chromium	<	<	<	<
Cobalt	<	<	<	<
Copper	<	<	<	<
Iron	0.0841	0.151	0.169	1.03
Lead (PMS)	.	.	.	.
Lead	<	<	<	<
Lithium	<	<	<	<
Manganese	<	<	<	0.0569
Mercury (CVAA)	<	<	<	<
Nickel (PMS)	.	.	.	.
Nickel	<	<	<	<
Selenium (PMS)	.	.	.	.
Strontium	0.0236	0.0705	0.0346	0.0577
Thallium (PMS)	.	.	.	.
Uranium (PMS)	.	.	.	.
Uranium (KPA)	<	0.0316	<	<
Vanadium	<	<	<	<
Zinc	<	<	<	<

APPENDIX D.2
VOLATILE ORGANIC COMPOUNDS

APPENDIX D.2: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	BCK-00.63		BCK-03.30		BCK-04.55			BCK-07.87	
Location	EXP-SW		EXP-SW		EXP-SW			EXP-SW	
Date Sampled	01/11/01	07/11/01	03/22/01	09/18/01	01/11/01	07/12/01		01/11/01	07/11/01
Program	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type					Dup				
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	BCK-09.20		BCK-09.40		BCK-09.47		BCK-11.54	BCK-11.84	BCK-11.97	
Location	EXP-SW		EXP-SW		EXP-SW		EXP-SW	EXP-SW	EXP-SW	
Date Sampled	03/21/01	09/17/01	01/10/01	07/11/01	03/21/01	09/17/01	09/17/01	09/17/01	01/10/01	
Program	WRRP	WRRP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	GWPP	
Sample Type										
Chloroethenes (µg/L)										
Tetrachloroethene	<	<	5 J	<	4 J	<	<	<	3 J	
Trichloroethene	<	<	3 J	<	3 J	<	<	<	<	
cis-1,2-Dichloroethene	5 J	<	50	6	32	1 J	<	<	<	
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	
Vinyl chloride	<	<	<	<	<	<	<	<	<	
Chloroethanes (µg/L)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethane	<	<	3 J	<	2 J	<	<	<	<	
Chloroethane	<	<	<	<	<	<	<	<	<	
Chloromethanes (µg/L)										
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	
Chloroform	<	<	<	<	<	<	<	<	<	
Methylene chloride	<	<	<	<	<	<	<	<	<	
Petrol. Hydrocarb. (µg/L)										
Benzene	<	<	<	<	<	<	<	<	<	
Dimethylbenzene	<	<	<	<	<	<	<	<	<	
Toluene	<	<	<	<	<	<	<	<	<	

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Sampling Point	BCK-11.97	BCK-12.34		ET-4		GW-008		GW-046	
Location	EXP-SW	EXP-SW		WWSY		OLF		BG	
Date Sampled	07/12/01	03/21/01	09/17/01	01/18/01	02/13/01	01/03/01	07/09/01	01/04/01	07/09/01
Program	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethenes (µg/L)									
Tetrachloroethene	<	6	3 J	<	<	23	66	1800	690
Trichloroethene	<	<	<	<	<	11	8	2900	1200
cis-1,2-Dichloroethene	<	<	<	<	<	20	18	6400	2800
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	30	20
1,1-Dichloroethene	<	<	<	<	<	6	5 J	170	82
Vinyl chloride	<	<	<	<	<	<	<	640	270
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	260	120
1,1,2-Trichloroethane	<	<	<	<	<	<	<	3 J	2 J
1,2-Dichloroethane	<	<	<	<	<	<	<	3 J	2 J
1,1-Dichloroethane	<	<	<	<	<	10	9	240 J	130
Chloroethane	<	<	<	<	<	<	<	29	6 J
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	4 J	2 J
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	2 J	<	21	10
Dimethylbenzene	<	<	<	<	<	<	<	3 J	2 J
Toluene	<	<	<	<	<	1 J	<	<	<

Sampling Point	GW-053		GW-056	GW-077		GW-078		GW-079	
Location	BG		EXP-A	BG		BG		BG	
Date Sampled	02/12/01	07/25/01	03/14/01	01/31/01	08/01/01	01/31/01	08/01/01	01/31/01	08/02/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	4 J	3 J	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	18	13	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	2 J	3	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	8	6	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

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Sampling Point	GW-080				GW-082		GW-085		
Location	BG				BG		OLF		
Date Sampled	01/31/01		08/06/01		02/13/01	07/26/01	02/05/01		08/01/01
Program	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type		Dup		Dup				DUP	
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	640	840	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	9	27	<	<
Vinyl chloride	<	<	<	<	<	190	240	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	7	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	360	1200	<	<
Chloroethane	<	<	<	<	<	28	18	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	1 J	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	8	31	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-098		GW-115		GW-124		GW-225					
Location	OLF		S3		S3		OLF					
Date Sampled	03/13/01		08/08/01		01/04/01		07/09/01		03/19/01		08/08/01	
Program	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP			
Sample Type									Dup			
Chloroethenes (µg/L)												
Tetrachloroethene	<	<	<	<	<	<	2 J	<	<			
Trichloroethene	5 J	3 J	<	<	<	<	<	220	200			
cis-1,2-Dichloroethene	5	5	<	<	<	<	<	2 J	2 J			
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<			
1,1-Dichloroethene	<	<	<	<	<	<	<	2 J	2 J			
Vinyl chloride	<	<	<	<	<	<	<	<	<			
Chloroethanes (µg/L)												
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<			
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<			
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<			
1,1-Dichloroethane	2 J	2 J	<	<	<	<	<	<	<			
Chloroethane	<	<	<	<	<	<	<	<	<			
Chloromethanes (µg/L)												
Carbon tetrachloride	<	<	<	<	<	<	<	4 J	4 J			
Chloroform	<	<	<	<	<	<	<	<	2 J			
Methylene chloride	<	<	<	<	<	<	<	<	<			
Petrol. Hydrocarb. (µg/L)												
Benzene	<	<	<	<	<	<	<	<	<			
Dimethylbenzene	<	<	<	<	<	<	<	<	<			
Toluene	<	<	<	<	<	<	<	<	<			

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Sampling Point	GW-226			GW-276		GW-311		GW-315	
Location	OLF			S3		RS		SPI	
Date Sampled	02/06/01	08/02/01		01/04/01	07/10/01	02/05/01	07/31/01	01/29/01	07/31/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP
Sample Type			Dup						
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	9	9	<	<	11	10
Trichloroethene	120	79	73	<	<	3 J	3 J	5 J	5 J
cis-1,2-Dichloroethene	5	7	7	<	<	<	<	2 J	2 J
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-363				GW-364		GW-365		
Location	EMWMF				OLF		OLF		
Date Sampled	04/04/01	06/04/01	08/28/01	11/29/01	03/13/01	08/07/01	03/27/01	08/07/01	
Program	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type							Dup		
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	7	12	54	54	45
cis-1,2-Dichloroethene	<	<	<	<	3 J	8	17	16	19
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	4 J	18	18	16
Vinyl chloride	<	<	<	<	<	<	<	<	2 J
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	3 J	3 J	2 J
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	3 J	5 J	5 J	6
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

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Volatile Organic Compounds

Sampling Point	GW-526		GW-537		GW-616		GW-627		GW-639
Location	S3		OLF		S3		BG		EMWMF
Date Sampled	02/01/01	08/06/01	02/06/01	08/02/01	03/27/01	08/09/01	02/13/01	07/26/01	04/05/01
Program	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	WRRP
Sample Type									
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	350	390	<
Trichloroethene	<	<	<	<	<	<	92	120	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	6	8	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	11	12	<
Vinyl chloride	<	<	<	<	<	<	13	11	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	41	49	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	2 J	2 J	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-639			GW-653		GW-683		GW-684	
Location	EMWMF			BG		EXP-A		EXP-A	
Date Sampled	06/13/01	08/28/01	11/26/01	02/12/01	07/25/01	01/09/01	07/10/01	01/09/01	07/10/01
Program	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type									
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	8	10	<	<	<	<
Trichloroethene	<	<	<	6	6	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	130	120	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	4 J	4 J	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	10	9	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	2 J	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

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Sampling Point	GW-685	GW-695		GW-703		GW-704		GW-706	
Location	EXP-A	EXP-B		EXP-B		EXP-B		EXP-B	
Date Sampled	03/14/01	01/16/01	07/16/01	01/22/01	07/16/01	01/23/01	07/17/01	01/23/01	
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type									Dup
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	6	7	16	16	62	55	20	19
cis-1,2-Dichloroethene	<	3 J	3 J	6	6	5 J	2 J	14	13
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	6	4 J	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-706	GW-712		GW-713		GW-714		GW-715	
Location	EXP-B	EXP-W		EXP-W		EXP-W		EXP-W	
Date Sampled	07/17/01	01/02/01	07/02/01	01/03/01	07/10/01	01/02/01	07/02/01	01/02/01	
Program	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									Dup
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	14	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	9	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

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Sampling Point	GW-715		GW-724		GW-725		GW-738		GW-740
Location	EXP-W		EXP-C		EXP-C		EXP-C		EXP-C
Date Sampled	07/09/01		01/25/01	07/19/01	01/22/01	07/19/01	01/24/01	07/18/01	01/24/01
Program	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type		Dup							
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	3 J	<	2 J	<	<	<
Trichloroethene	<	<	120	100	9	10	33	30	57
cis-1,2-Dichloroethene	<	<	3 J	3 J	2 J	2 J	<	<	2 J
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-740		GW-829		GW-835				GW-916
Location	EXP-C		OLF		S3				EMWMF
Date Sampled	07/18/01		01/29/01	08/01/01	02/06/01	05/16/01	08/09/01	11/14/01	04/02/01
Program	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup								
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	3 J	5 J	4 J	4 J	<
Trichloroethene	51	61	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	2 J	2 J	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

APPENDIX D.2: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-916						GW-917		
Location	EMWMF						EMWMF		
Date Sampled	04/02/01	05/30/01		08/22/01		12/03/01		04/03/01	06/04/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup	Dup	Dup	Dup	Dup	Dup	Dup	Dup	Dup
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-917			GW-918			GW-919	GW-920	
Location	EMWMF			EMWMF			EMWMF	EMWMF	
Date Sampled	08/23/01	12/05/01	04/02/01	05/30/01	08/23/01	12/03/01	12/04/01	04/04/01	06/11/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

APPENDIX D.2: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-920			GW-921			GW-922		
	Location		EMWMF	Location		EMWMF	Location		EMWMF
Date Sampled	08/23/01	12/04/01	04/03/01	05/31/01	08/27/01	11/27/01	04/04/01	06/11/01	08/23/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-922		GW-923				GW-924			GW-925
	Location		EMWMF	Location		EMWMF	Location		EMWMF	EMWMF
Date Sampled	12/04/01	04/02/01	06/06/01	08/27/01	12/03/01	06/05/01	08/28/01	12/05/01	04/03/01	
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	
Sample Type										
Chloroethenes (µg/L)										
Tetrachloroethene	<	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)										
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)										
Benzene	<	<	<	<	<	1 J	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<

APPENDIX D.2: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-925			GW-926				GW-927	
Location	EMWMF			EMWMF				EMWMF	
Date Sampled	05/31/01	08/27/01	11/28/01	04/02/01	06/05/01	08/27/01	11/29/01	04/03/01	05/30/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	1 J	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	GW-927		NT-01		NT-03		NT-07		NT-08	
Location	EMWMF		EXP-SW		EXP-SW		EXP-SW		EXP-SW	
Date Sampled	08/22/01	12/05/01	01/10/01	07/12/01	03/21/01	03/22/01	09/18/01	03/22/01	09/18/01	
Program	WRRP	WRRP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	
Sample Type										
Chloroethenes (µg/L)										
Tetrachloroethene	<	<	8	62	<	29	1 J	9	<	
Trichloroethene	<	<	<	<	<	21	2 J	6	<	
cis-1,2-Dichloroethene	<	<	<	2 J	<	87	10	79	2 J	
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethene	<	<	<	<	<	3 J	<	2 J	<	
Vinyl chloride	<	<	<	<	<	1 J	<	<	<	
Chloroethanes (µg/L)										
1,1,1-Trichloroethane	<	<	<	<	<	3 J	<	<	<	
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethane	<	<	<	<	<	8	1 J	5	<	
Chloroethane	<	<	<	<	<	<	<	<	<	
Chloromethanes (µg/L)										
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	
Chloroform	<	<	<	3 J	<	2 J	<	<	<	
Methylene chloride	<	<	<	3 J	<	<	<	<	<	
Petrol. Hydrocarb. (µg/L)										
Benzene	<	<	<	<	<	<	<	<	<	
Dimethylbenzene	<	<	<	<	<	<	<	<	<	
Toluene	<	<	<	<	<	<	<	<	<	

APPENDIX D.2: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	NT-8-E		NT-8-W		S07	SS-1		SS-4	
Location	EXP-SW		EXP-SW		EXP-SW	EXP-SW		EXP-SW	
Date Sampled	03/22/01	09/18/01	03/22/01	09/18/01	09/17/01	01/10/01	07/12/01	01/11/01	
Program	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP
Sample Type								Dup	
Chloroethenes (µg/L)									
Tetrachloroethene	1 J	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	12	11
cis-1,2-Dichloroethene	2 J	<	<	<	<	<	<	8	7
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

Sampling Point	SS-4	SS-5		SS-6.6		SS-7		SS-8	
Location	EXP-SW	EXP-SW		EXP-SW		EXP-SW		EXP-SW	
Date Sampled	07/11/01	01/11/01	07/11/01	03/22/01	WRRP	WRRP	WRRP	03/22/01	09/18/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	03/22/01	09/18/01
Sample Type					Dup				
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	15	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	9	2 J	<	<	<	<	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<
Chloromethanes (µg/L)									
Carbon tetrachloride	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. (µg/L)									
Benzene	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<

APPENDIX D.3
RADIOLOGICAL ANALYTES

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)			
				Activity	Error	MDA	Activity	Error	MDA	
BCK-00.63	EXP-SW	01/11/01	GWPP	8.7	3.2	2.2	18	5.7	7.6	
BCK-00.63	EXP-SW	07/11/01	GWPP	8.1	3.2	2.3	7.7	4.5	6.9	
BCK-03.30	EXP-SW	03/22/01	WRRP	11.67	3.34	2.67	11.46	2.66	3.45	
BCK-03.30	EXP-SW	09/18/01	WRRP	.	.	.	8.34	2.37	2.63	
BCK-04.55	EXP-SW	01/11/01	GWPP	20	5.1	3.5	29	6.8	8.4	
BCK-04.55	EXP-SW	07/12/01	GWPP	12	3.9	3	19	5.6	7.4	
BCK-04.55	Dup	07/12/01	GWPP	8.4	3.3	3	19	5.6	7.4	
BCK-07.87	EXP-SW	01/11/01	GWPP	57	8.4	2.4	69	7.8	6.2	
BCK-07.87	EXP-SW	07/11/01	GWPP	30	6.1	3.6	46	6.7	6.5	
BCK-09.20	EXP-SW	03/21/01	WRRP	29.92	3.22	0.25	33.1	2.59	2.02	
BCK-09.20	EXP-SW	09/17/01	WRRP	.	.	.	34.24	2.49	1.86	
BCK-09.40	EXP-SW	01/10/01	GWPP	100	11	2.8	90	9.5	8.1	
BCK-09.40	EXP-SW	07/11/01	GWPP	67	8.7	2.5	75	8.7	8	
BCK-09.47	EXP-SW	03/21/01	WRRP	73.99	5.25	0.26	61.65	3.15	1.83	
BCK-09.47	EXP-SW	09/17/01	WRRP	.	.	.	18.1	1.94	1.79	
BCK-11.54	EXP-SW	09/17/01	WRRP	.	.	.	148.66	3.84	1.81	
BCK-11.84	EXP-SW	09/17/01	WRRP	.	.	.	297.72	6.85	2.98	
BCK-11.97	EXP-SW	01/10/01	GWPP	45	9.6	5.7	390	19	8.8	
BCK-11.97	EXP-SW	07/12/01	GWPP	96	15	7.9	470	19	5.9	
ET-4	WWSY	01/18/01	WRRP	4.25	1.17	1.04	7.57	1.32	1.53	
ET-4	WWSY	02/13/01	WRRP	2.18	0.97	1.1	7.6	1.45	1.68	
GW-008	OLF	01/03/01	WRRP	<MDA	.	1.03	1.72	1.1	1.59	
GW-008	OLF	07/09/01	WRRP	<MDA	.	0.77	<MDA	.	1.62	
GW-046	BG	01/04/01	WRRP	1.49	0.86	1.05	4.08	1.17	1.49	
GW-046	BG	07/09/01	WRRP	1.33	0.9	1.17	4.12	1.37	1.84	
GW-053	BG	02/12/01	GWPP	<MDA	.	2.9	<MDA	.	8.7	
GW-053	BG	07/25/01	GWPP	<MDA	.	4.5	<MDA	.	7.8	
GW-056	EXP-A	03/14/01	GWPP	7.8	4.6	5.9	15	6.2	9.1	
GW-077	BG	01/31/01	WRRP	<MDA	.	2.96	<MDA	.	1.8	
GW-077	BG	08/01/01	WRRP	2.02	1.13	1.31	4.72	1.16	1.41	
GW-078	BG	01/31/01	WRRP	<MDA	.	1.53	2.18	1.2	1.72	
GW-078	BG	08/01/01	WRRP	1.67	1.09	1.45	<MDA	.	1.63	
GW-079	BG	01/31/01	WRRP	<MDA	.	2.27	6.95	1.44	1.72	
GW-079	BG	08/02/01	WRRP	<MDA	.	1.11	2.43	0.96	1.28	
GW-080	BG	01/31/01	WRRP	<MDA	.	1.07	<MDA	.	1.79	
GW-080	Dup	BG	01/31/01	WRRP	1.01	0.71	0.81	<MDA	.	1.73
GW-080	BG	08/06/01	WRRP	3.86	1.15	0.83	4.13	1.65	2.3	
GW-080	Dup	BG	08/06/01	WRRP	2.43	1.06	1.22	3.09	1.13	1.53
GW-082	BG	02/13/01	GWPP	<MDA	.	4.9	<MDA	.	7.5	
GW-082	BG	07/26/01	GWPP	<MDA	.	6.1	<MDA	.	7.6	
GW-085	OLF	02/05/01	GWPP	<MDA	.	7.3	200	13	7.1	
GW-085	Dup	OLF	02/05/01	GWPP	<MDA	.	6.9	200	14	9.5
GW-085	OLF	08/01/01	GWPP	<MDA	.	7.7	180	12	6.1	
GW-098	OLF	03/13/01	GWPP	<MDA	.	44	<MDA	.	77	
GW-098	OLF	08/08/01	GWPP	<MDA	.	4.2	<MDA	.	7.1	
GW-115	S3	01/04/01	WRRP	2.47	1.27	1.33	1.79	1.18	1.71	
GW-115	S3	07/09/01	WRRP	<MDA	.	1.41	2.12	1.74	1.69	
GW-124	S3	03/19/01	GWPP	<MDA	.	7.3	64	8.9	8.9	
GW-124	S3	08/09/01	GWPP	7.5	3.4	1	110	9.6	6.6	

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Activity	Error	MDA	Activity	Error	MDA
GW-225	OLF	03/19/01	GWPP	<MDA	.	5.5	<MDA	.	6.5
GW-225	OLF	08/08/01	GWPP	4.2	2.9	3.4	25	7	9.1
GW-225	Dup	08/08/01	GWPP	4.9	3.3	4	16	5.2	6.9
GW-226	OLF	02/06/01	GWPP	5.2	3.4	4.2	18	4.8	5.7
GW-226	OLF	08/02/01	GWPP	7.7	4.1	4.6	24	6	7.2
GW-226	Dup	08/02/01	GWPP	7.9	4	4.3	17	6.3	8.6
GW-276	S3	01/04/01	WRRP	500.51	14.69	2.28	482.99	8.74	3.51
GW-276	S3	07/10/01	WRRP	443	15.1	3.05	454	10.8	5.02
GW-311	RS	02/05/01	GWPP	<MDA	.	4.2	<MDA	.	6.8
GW-311	RS	07/31/01	GWPP	<MDA	.	3.3	<MDA	.	6
GW-315	SPI	01/29/01	GWPP	<MDA	.	3	35	6	6.4
GW-315	SPI	07/31/01	GWPP	<MDA	.	4.6	47	7.6	7.9
GW-363	EMWMF	06/04/01	WRRP	<MDA	.	1.15	2.42	1.66	1.61
GW-363	EMWMF	08/28/01	WRRP	<MDA	.	1.84	5.85	2.14	2.41
GW-363	EMWMF	11/29/01	WRRP	<MDA	.	2.55	<MDA	.	2.36
GW-364	OLF	03/13/01	GWPP	<MDA	.	5.4	8.7	4.2	6.1
GW-364	OLF	08/07/01	GWPP	<MDA	.	5.9	<MDA	.	16
GW-365	OLF	03/27/01	GWPP	<MDA	.	6.4	<MDA	.	6.2
GW-365	Dup	03/27/01	GWPP	<MDA	.	5.1	<MDA	.	6.2
GW-365	OLF	08/07/01	GWPP	<MDA	.	7.4	<MDA	.	16
GW-526	S3	02/01/01	WRRP	27.55	18.16	18.37	<MDA	.	28.99
GW-526	S3	08/06/01	WRRP	155.82	33.76	23.76	718.01	47.83	34.91
GW-537	OLF	02/06/01	GWPP	<MDA	.	33	600	79	75
GW-537	OLF	08/02/01	GWPP	<MDA	.	22	670	51	35
GW-616	S3	03/27/01	GWPP	<MDA	.	17	<MDA	.	20
GW-616	S3	08/09/01	GWPP	<MDA	.	33	<MDA	.	68
GW-627	BG	02/13/01	GWPP	<MDA	.	14	<MDA	.	10
GW-627	BG	07/26/01	GWPP	<MDA	.	17	<MDA	.	14
GW-639	EMWMF	06/13/01	WRRP	<MDA	.	2.9	<MDA	.	4.52
GW-639	EMWMF	08/28/01	WRRP	<MDA	.	3.22	<MDA	.	3.94
GW-639	EMWMF	11/26/01	WRRP	<MDA	.	4.33	<MDA	.	4.4
GW-653	BG	02/12/01	GWPP	<MDA	.	2.9	<MDA	.	8.3
GW-653	BG	07/25/01	GWPP	<MDA	.	3.5	<MDA	.	10
GW-683	EXP-A	01/09/01	GWPP	27	6.1	2.9	77	10	10
GW-683	EXP-A	07/10/01	GWPP	19	4.8	2.3	27	5.7	6.7
GW-684	EXP-A	01/09/01	GWPP	22	5.3	3.2	40	6.8	7.2
GW-684	EXP-A	07/10/01	GWPP	21	5.1	2.6	34	7.5	9
GW-685	EXP-A	03/14/01	GWPP	<MDA	.	7.2	<MDA	.	8.6
GW-695	EXP-B	01/16/01	GWPP	<MDA	.	2.6	42	7.7	8.4
GW-695	EXP-B	07/16/01	GWPP	<MDA	.	5	46	7.6	7.3
GW-703	EXP-B	01/22/01	GWPP	3.5	2.3	2.3	53	7.6	7
GW-703	EXP-B	07/16/01	GWPP	<MDA	.	4.5	47	6.6	5.9
GW-704	EXP-B	01/23/01	GWPP	6.2	3	2.5	36	7.1	8.2
GW-704	EXP-B	07/17/01	GWPP	<MDA	.	3.6	16	5	6.4
GW-706	EXP-B	01/23/01	GWPP	69	11	3.2	310	16	7
GW-706	Dup	01/23/01	GWPP	52	9.2	1.1	300	15	6
GW-706	EXP-B	07/17/01	GWPP	56	8.7	4.2	140	11	7.8
GW-712	EXP-W	01/02/01	WRRP	<MDA	.	2.52	5.28	1.69	2.25
GW-712	EXP-W	07/02/01	WRRP	<MDA	.	2.2	<MDA	.	2.2

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)			
				Activity	Error	MDA	Activity	Error	MDA	
GW-713	EXP-W	01/03/01	WRRP	<MDA	-	2.28	<MDA	-	2.42	
GW-713	EXP-W	07/10/01	WRRP	19.45	3.97	3.16	28.57	3.43	2.92	
GW-714	EXP-W	01/02/01	WRRP	<MDA	-	1.76	3.31	1.79	2.09	
GW-714	EXP-W	07/02/01	WRRP	<MDA	-	1.71	<MDA	-	2.12	
GW-715	EXP-W	01/02/01	WRRP	8.02	2.04	1.91	10.89	2.14	2.27	
GW-715	Dup	EXP-W	01/02/01	WRRP	5.19	1.71	1.73	9.88	1.91	2.02
GW-715		EXP-W	07/09/01	WRRP	3.65	1.43	1.37	3.99	1.43	1.96
GW-715	Dup	EXP-W	07/09/01	WRRP	3	1.14	1	5.13	1.05	0.95
GW-724	EXP-C	01/25/01	GWPP	4.1	2.9	3.7	41	7.2	7.8	
GW-724	EXP-C	07/19/01	GWPP	<MDA	-	5	38	6.1	5.7	
GW-725	EXP-C	01/22/01	GWPP	7.4	3.4	2.8	22	5.2	6.1	
GW-725	EXP-C	07/19/01	GWPP	10	4.6	5.2	36	7.1	8.2	
GW-738	EXP-C	01/24/01	GWPP	<MDA	-	2.6	65	8.3	7.1	
GW-738	EXP-C	07/18/01	GWPP	<MDA	-	5.1	42	6.7	6.8	
GW-740	EXP-C	01/24/01	GWPP	2.6	1.7	0.77	<MDA	-	7.2	
GW-740	EXP-C	07/18/01	GWPP	<MDA	-	3.8	12	5.3	7.7	
GW-740	Dup	EXP-C	07/18/01	GWPP	<MDA	-	4.5	12	4.7	6.5
GW-829	OLF	01/29/01	GWPP	<MDA	-	4.9	<MDA	-	6.4	
GW-829	OLF	08/01/01	GWPP	<MDA	-	6.6	<MDA	-	6.5	
GW-916	EMWMF	05/30/01	WRRP	<MDA	-	1.9	6.35	1.3	1.52	
GW-916	EMWMF	08/22/01	WRRP	<MDA	-	1.97	7.03	1.78	1.63	
GW-916	Dup	EMWMF	08/22/01	WRRP	3.56	1.66	1.52	7.88	1.76	1.59
GW-916	EMWMF	12/03/01	WRRP	<MDA	-	2.9	4.19	1.5	2.03	
GW-916	Dup	EMWMF	12/03/01	WRRP	<MDA	-	2.17	4.49	1.83	2.09
GW-917	EMWMF	06/04/01	WRRP	<MDA	-	1.33	4.16	1.16	1.08	
GW-917	EMWMF	08/23/01	WRRP	<MDA	-	2.46	<MDA	-	2.09	
GW-917	EMWMF	12/05/01	WRRP	<MDA	-	1.51	<MDA	-	1.85	
GW-918	EMWMF	05/30/01	WRRP	1.2	0.64	0.61	3.65	1.08	1.36	
GW-918	EMWMF	08/23/01	WRRP	2.14	1.06	1.27	3.36	1.39	1.92	
GW-918	EMWMF	12/03/01	WRRP	<MDA	-	1.64	4.03	1.39	1.87	
GW-919	EMWMF	12/04/01	WRRP	<MDA	-	3.46	<MDA	-	1.99	
GW-920	EMWMF	06/11/01	WRRP	<MDA	-	25.66	60.74	60.38	59.07	
GW-920	EMWMF	08/23/01	WRRP	<MDA	-	1.24	<MDA	-	1.91	
GW-920	EMWMF	12/04/01	WRRP	<MDA	-	1.23	<MDA	-	1.77	
GW-921	EMWMF	05/31/01	WRRP	<MDA	-	1.36	3.79	1.78	1.7	
GW-921	EMWMF	08/27/01	WRRP	<MDA	-	1.38	<MDA	-	1.95	
GW-921	EMWMF	11/27/01	WRRP	0.98	0.78	0.96	2.29	1.31	1.86	
GW-922	EMWMF	06/11/01	WRRP	<MDA	-	2.34	8.34	2.49	2.31	
GW-922	EMWMF	08/23/01	WRRP	<MDA	-	1.56	2.59	1.4	1.99	
GW-922	EMWMF	12/04/01	WRRP	<MDA	-	1.9	3.69	1.41	1.92	
GW-923	EMWMF	08/28/01	WRRP	7.61	2.44	2.31	9.77	2.32	2.5	
GW-923	EMWMF	12/03/01	WRRP	<MDA	-	3.46	4.22	1.47	1.99	
GW-924	EMWMF	06/05/01	WRRP	<MDA	-	1.58	<MDA	-	2.34	
GW-924	EMWMF	08/28/01	WRRP	<MDA	-	1.36	<MDA	-	1.94	
GW-924	EMWMF	12/05/01	WRRP	<MDA	-	1.39	<MDA	-	2.14	
GW-925	EMWMF	05/31/01	WRRP	<MDA	-	1.95	<MDA	-	2.93	
GW-925	EMWMF	08/27/01	WRRP	6.5	3.03	2.78	3.68	2.87	2.79	
GW-925	EMWMF	11/28/01	WRRP	5.98	3.25	3.06	8.15	3.23	3.05	

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)			
				Activity	Error	MDA	Activity	Error	MDA	
GW-926	EMWMF	06/05/01	WRRP	3.54	1.38	1.08	11.06	2.15	1.9	
GW-926	EMWMF	08/27/01	WRRP	<MDA	.	1.7	2.36	1.4	2.02	
GW-926	EMWMF	11/29/01	WRRP	<MDA	.	2.01	2.57	1.53	2.19	
GW-927	EMWMF	05/30/01	WRRP	1.47	0.82	0.8	<MDA	.	1.88	
GW-927	EMWMF	08/22/01	WRRP	<MDA	.	2.03	<MDA	.	5.31	
GW-927	EMWMF	12/05/01	WRRP	<MDA	.	1.35	<MDA	.	1.82	
NT-01	EXP-SW	01/10/01	GWPP	120	14	4.4	230	15	8.3	
NT-01	EXP-SW	07/12/01	GWPP	90	30	6.8	4400	140	40	
SS-1	EXP-SW	01/10/01	GWPP	18	5.9	3.9	64	10	10	
SS-1	EXP-SW	07/12/01	GWPP	24	6.8	3.6	67	8.9	8.5	
SS-4	EXP-SW	01/11/01	GWPP	56	8.7	2.6	140	11	7.7	
SS-4	Dup	EXP-SW	01/11/01	GWPP	48	8.2	3.7	150	12	7.4
SS-4		EXP-SW	07/11/01	GWPP	60	9.5	4	180	13	9.7
SS-5	EXP-SW	01/11/01	GWPP	41	7.1	2.7	68	7.7	6.3	
SS-5	EXP-SW	07/11/01	GWPP	31	6.3	3.7	69	8.7	8.3	
SS-6.6	EXP-SW	03/22/01	WRRP	4.1	1.24	0.88	2.73	1.24	1.72	
SS-6.6	Dup	EXP-SW	03/22/01	WRRP	2.27	0.95	0.86	2.89	1.25	1.71
SS-7	EXP-SW	03/22/01	WRRP	1.41	0.71	0.72	<MDA	.	1.66	
SS-7	EXP-SW	09/18/01	WRRP	.	.	.	8.59	2.37	2.61	
SS-8	EXP-SW	03/22/01	WRRP	<MDA	.	1.06	1.78	1.12	1.61	
SS-8	EXP-SW	09/18/01	WRRP	.	.	.	4.82	2.3	2.66	

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	BCK-00.63						BCK-03.30		
Location	EXP-SW						EXP-SW		
Date Sampled	01/11/01			07/11/01			03/22/01		
Program	GWPP			GWPP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	8.7	3.2	2.2	8.1	3.2	2.3	11.67	3.34	2.67
Gross Beta	18	5.7	7.6	7.7	4.5	6.9	11.46	2.66	3.45
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	15	<MDA	.	.	13	17.39	9.51
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	3.6	0.64	0.16	3.3	0.79	0.42	78.01	17.04	0.34
Uranium-235	<MDA	.	0.16	<MDA	.	0.28	9.47	2.63	0.36
Uranium-236	.	.	.	.	.	.	8.99	2.47	0.32
Uranium-238	7	1	0.13	5	0.99	0.092	691.1	146.3	0.46

Sampling Point	BCK-03.30			BCK-04.55					
Location	EXP-SW			EXP-SW					
Date Sampled	09/18/01			01/11/01			07/12/01		
Program	WRRP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	20	5.1	3.5	12	3.9	3
Gross Beta	8.34	2.37	2.63	29	6.8	8.4	19	5.6	7.4
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	14.48	28	9.9	15	<MDA	.	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	1.22	0.38	0.22	6.1	0.94	0.18	3.7	0.77	0.32
Uranium-235	<MDA	.	0.15	0.22	0.16	0.075	0.28	0.2	0.096
Uranium-236	<MDA	.	0.12	.	.	.	.	.	.
Uranium-238	2.54	0.62	0.2	13	1.7	0.15	7.1	1.2	0.19

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	BCK-04.55			BCK-07.87					
Location	EXP-SW			EXP-SW					
Date Sampled	07/12/01			01/11/01			07/11/01		
Program	GWPP			WRRP			WRRP		
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	8.4	3.3	3	.	.	.	.	.	.
Gross Beta	19	5.6	7.4	.	.	.	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	89.54	14.18	20.89	55.03	8.86	13.32
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	3.4	0.75	0.32	21.78	4.49	0.58	11.95	2.81	0.38
Uranium-235	0.19	0.17	0.1	0.68	0.39	0.28	0.46	0.33	0.29
Uranium-236	.	.	.	0.72	0.38	0.11	0.72	0.4	0.13
Uranium-238	6.9	1.2	0.35	39.08	7.74	0.27	26.07	5.66	0.26

Sampling Point	BCK-09.20						BCK-09.47		
Location	EXP-SW						EXP-SW		
Date Sampled	03/21/01			09/17/01			03/21/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	29.92	3.22	0.25	.	.	.	73.99	5.25	0.26
Gross Beta	33.1	2.59	2.02	34.24	2.49	1.86	61.65	3.15	1.83
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	50.43	10.78	16.97	63.3	12.5	18.9	52.8	10.7	16.7
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	14.59	3.01	0.25	13.18	2.86	0.35	18.44	3.73	0.23
Uranium-235	0.56	0.34	0.22	0.62	0.37	0.3	1.9	0.7	0.28
Uranium-236	0.55	0.32	0.11	0.46	0.3	0.31	0.39	0.27	0.12
Uranium-238	34.9	6.66	0.27	28.2	5.69	0.28	70.05	13.02	0.26

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	BCK-09.47			BCK-11.54			BCK-11.84		
Location	EXP-SW			EXP-SW			EXP-SW		
Date Sampled	09/17/01			09/17/01			09/17/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	.	.	.	.	.	.
Gross Beta	18.1	1.94	1.79	148.66	3.84	1.81	297.72	6.85	2.98
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	30.6	11.7	18.8	288	18.3	21.4	582	22.8	21.6
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	16.75	3.83	0.33	16.79	3.5	0.21	29.75	5.69	0.27
Uranium-235	0.8	0.48	0.29	0.58	0.33	0.21	1.28	0.54	0.3
Uranium-236	1.17	0.56	0.26	0.63	0.32	0.19	0.85	0.4	0.19
Uranium-238	57.75	12.05	0.35	29.07	5.82	0.24	49.24	9.16	0.24

Sampling Point	BCK-11.97						BCK-12.34		
Location	EXP-SW						EXP-SW		
Date Sampled	01/10/01			07/12/01			03/21/01		
Program	GWPP			GWPP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	45	9.6	5.7	96	15	7.9	.	.	.
Gross Beta	390	19	8.8	470	19	5.9	.	.	.
Americium-241	<MDA	.	0.38	0.17	0.14	0.15	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	1.8	0.55	0.39	0.87	0.36	0.23	.	.	.
Plutonium-239	<MDA	.	0.19	<MDA	.	0.18	.	.	.
Radium-223/224/226	0.4	0.18	0.23	<MDA	.	0.97	.	.	.
Strontium-89/90	<MDA	.	1.9	<MDA	.	3.5	.	.	.
Technetium-99	580	16	15	590	14	13	303	13.9	16.6
Thorium-228	<MDA	.	0.24	<MDA	.	0.4	.	.	.
Thorium-230	<MDA	.	0.24	0.57	0.38	0.4	.	.	.
Thorium-232	<MDA	.	0.2	<MDA	.	0.32	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	19	2.4	0.26	27	3.2	0.28	28.3	5.92	0.34
Uranium-235	0.62	0.31	0.3	1.4	0.44	0.083	1.39	0.59	0.26
Uranium-236	.	.	.	.	.	.	1.03	0.47	0.24
Uranium-238	31	3.6	0.24	41	4.5	0.2	47.92	9.76	0.32

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	BCK-12.34			ET-4					
Location	EXP-SW			EXP-SW					
Date Sampled	09/17/01			01/18/01			02/13/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	4.25	1.17	1.04	2.18	0.97	1.1
Gross Beta	.	.	.	7.57	1.32	1.53	7.6	1.45	1.68
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	774	24.3	20.3	.	.	.	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	37.96	8.02	0.48	1.07	0.5	0.43	0.95	0.44	0.34
Uranium-235	1.04	0.55	0.39	<MDA	.	0.39	<MDA	.	0.23
Uranium-236	1.13	0.56	0.4	<MDA	.	0.13	<MDA	.	0.27
Uranium-238	60.59	12.52	0.38	<MDA	.	0.33	0.79	0.4	0.33

Sampling Point	GW-008						GW-046		
Location	OLF						BG		
Date Sampled	01/03/01			07/09/01			01/04/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.03	<MDA	.	0.77	1.49	0.86	1.05
Gross Beta	1.72	1.1	1.59	<MDA	.	1.62	4.08	1.17	1.49
Americium-241	0.64	0.37	0.38	<MDA	.	0.28	<MDA	.	0.35
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	0.64	0.42	0.5	<MDA	.	0.54	1	0.49	0.35
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	0.91	0.64	0.87	2.79	0.91	0.71	<MDA	.	0.85
Strontium-89/90	<MDA	.	1.57	<MDA	.	1.82	<MDA	.	2.55
Technetium-99	<MDA	.	18.37	14.78	7.98	13.11	<MDA	.	21.18
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.28	0.58	0.37	0.44	0.42	0.27	0.21
Uranium-235	<MDA	.	0.13	<MDA	.	0.26	<MDA	.	0.26
Uranium-236	<MDA	.	0.2	<MDA	.	0.35	<MDA	.	0.3
Uranium-238	<MDA	.	0.25	<MDA	.	0.48	0.31	0.23	0.18

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-046			GW-053					
Location	BG			BG					
Date Sampled	07/09/01			02/12/01			07/25/01		
Program	WRRP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	1.33	0.9	1.17	<MDA	.	.	2.9	<MDA	.
Gross Beta	4.12	1.37	1.84	<MDA	.	.	8.7	<MDA	.
Americium-241	<MDA	.	0.34	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	<MDA	.	0.44	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	3.23	0.96	0.65	.	.	.	.	.	.
Strontium-89/90	<MDA	.	1.96	.	.	.	.	.	.
Technetium-99	<MDA	.	13.07	<MDA	.	.	13	<MDA	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.32	1.6	0.49	0.22	1.6	0.37	0.12
Uranium-235	<MDA	.	0.22	<MDA	.	0.11	<MDA	.	0.064
Uranium-236	<MDA	.	0.23	.	.	.	.	.	.
Uranium-238	<MDA	.	0.29	1.1	0.41	0.22	0.85	0.26	0.051

Sampling Point	GW-077						GW-078		
Location	BG						BG		
Date Sampled	01/31/01			08/01/01			01/31/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.96	2.02	1.13	1.31	<MDA	.	1.53
Gross Beta	<MDA	.	1.8	4.72	1.16	1.41	2.18	1.2	1.72
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	20.95	<MDA	.	.	13.3	<MDA	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.32	0.53	0.3	0.22	0.41	0.3	0.38
Uranium-235	<MDA	.	0.25	<MDA	.	0.21	<MDA	.	0.4
Uranium-236	<MDA	.	0.22	<MDA	.	0.11	<MDA	.	0.13
Uranium-238	<MDA	.	0.3	0.47	0.28	0.17	<MDA	.	0.5

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-078			GW-079					
Location	BG			BG					
Date Sampled	08/01/01			01/31/01			08/02/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	1.67	1.09	1.45	<MDA		2.27	<MDA		1.11
Gross Beta	<MDA		1.63	6.95	1.44	1.72	2.43	0.96	1.28
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA		14	<MDA		19.58	<MDA		15.7
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	1.28	0.7	0.66	<MDA		0.48	0.83	0.37	0.25
Uranium-235	<MDA		0.26	<MDA		0.24	<MDA		0.11
Uranium-236	<MDA		0.4	0.14 R	0.16	0.13	<MDA		0.17
Uranium-238	0.67	0.51	0.63	<MDA		0.41	<MDA		0.22

Sampling Point	GW-080								
Location	BG								
Date Sampled	01/31/01						08/06/01		
Program	WRRP					WRRP			
Sample Type				Dup					
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA		1.07	1.01	0.71	0.81	3.86	1.15	0.83
Gross Beta	<MDA		1.79	<MDA		1.73	4.13	1.65	2.3
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA		21.62	<MDA		19.82	<MDA		16.9
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.44	0.32	0.33	1.37	0.57	0.48	0.29	0.21	0.18
Uranium-235	<MDA		0.32	<MDA		0.36	<MDA		0.22
Uranium-236	<MDA		0.32	<MDA		0.25	<MDA		0.17
Uranium-238	<MDA		0.52	<MDA		0.43	0.29	0.21	0.15

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-080			GW-085					
Location	BG			OLF					
Date Sampled	08/06/01			02/05/01					
Program	WRRP			GWPP					
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	2.43	1.06	1.22	<MDA			7.3	<MDA	
Gross Beta	3.09	1.13	1.53	200	13	7.1	200	14	9.5
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA		15.66	270	11	13	300	12	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA		0.27	.	.	.	.	.	.
Uranium-235	<MDA		0.25	.	.	.	.	.	.
Uranium-236	<MDA		0.11	.	.	.	.	.	.
Uranium-238	<MDA		0.2	.	.	.	.	.	.

Sampling Point	GW-085			GW-098					
Location	OLF			OLF					
Date Sampled	08/01/01			03/13/01			08/08/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	7.7	<MDA	.		44	<MDA	.
Gross Beta	180	12	6.1	<MDA			77	<MDA	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	370	13	13	.	.	.	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	0.7	0.33	0.32	1.1	0.39	0.29
Uranium-235	.	.	.	<MDA		0.1	<MDA		0.092
Uranium-236	.	.	.	0.63	0.31	0.28	0.63	0.27	0.074
Uranium-238	.	.	.	.	.	.	.	.	.

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-115						GW-124		
Location	S3						S3		
Date Sampled	01/04/01			07/09/01			03/19/01		
Program	WRRP			WRRP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	2.47	1.27	1.33	<MDA	.	.	1.41	.	7.3
Gross Beta	1.79	1.18	1.71	2.12	1.74	1.69	64	8.9	8.9
Americium-241	0.45	0.4	0.43	0.29	0.21	0.26	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	0.95	0.51	0.39	<MDA	.	.	0.34	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	1.34	0.79	1.11	1.46	0.63	0.41	.	.	.
Strontium-89/90	<MDA	.	1.54	<MDA	.	2.01	.	.	.
Technetium-99	<MDA	.	29.24	<MDA	.	13.58	76	9.2	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.7	<MDA	.	0.42	1.6	0.51	0.35
Uranium-235	<MDA	.	0.36	<MDA	.	0.49	0.25	0.21	0.11
Uranium-236	<MDA	.	0.24	<MDA	.	0.33	.	.	.
Uranium-238	<MDA	.	0.28	<MDA	.	0.48	2.2	0.6	0.091

Sampling Point	GW-124			GW-225					
Location	S3			OLF					
Date Sampled	08/09/01			03/19/01			08/08/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	7.5	3.4	1	<MDA	.	.	5.5	4.2	2.9
Gross Beta	110	9.6	6.6	<MDA	.	.	6.5	25	7
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	130	10	13	<MDA	.	.	13	21	8
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	1.2	0.4	0.2	2.1	0.55	0.24	2.1	0.55	0.29
Uranium-235	<MDA	.	0.1	<MDA	.	0.24	<MDA	.	0.23
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	1.3	0.44	0.34	1.2	0.4	0.079	1.5	0.43	0.076

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-225			GW-226					
Location	OLF			OLF					
Date Sampled	08/08/01			02/06/01			08/02/01		
Program	GWPP			GWPP			GWPP		
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	4.9	3.3	4	5.2	3.4	4.2	7.7	4.1	4.6
Gross Beta	16	5.2	6.9	18	4.8	5.7	24	6	7.2
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	23	8	13	16	7.8	13	<MDA	.	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	2.5	0.6	0.27	3.2	0.69	0.26	3.4	0.75	0.37
Uranium-235	<MDA	.	0.095	0.24	0.18	0.092	<MDA	.	0.31
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	1.2	0.41	0.3	4.5	0.85	0.28	5.2	0.97	0.25

Sampling Point	GW-226			GW-276					
Location	OLF			S3					
Date Sampled	08/02/01			01/04/01			07/10/01		
Program	GWPP			WRRP			WRRP		
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	7.9	4	4.3	500.51	14.69	2.28	443	15.1	3.05
Gross Beta	17	6.3	8.6	482.99	8.74	3.51	454	10.8	5.02
Americium-241	.	.	.	<MDA	.	0.65	<MDA	.	0.86
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	18.63	4.18	0.45	21.14	6.08	2.31
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	2.08	0.79	0.62	4.83	1.12	0.72
Strontium-89/90	.	.	.	<MDA	.	1.54	3.89	0.44	1.77
Technetium-99	<MDA	.	13	651.27	23.12	21.6	523.42	15.1	13.48
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	3.3	0.68	0.18	152.3	45.38	1.33	143.3	30.54	2.49
Uranium-235	<MDA	.	0.22	7.64	3.34	0.93	4.09	2.36	1.37
Uranium-236	.	.	.	5.59	2.62	1.41	7.13	3.1	1.23
Uranium-238	6.1	1	0.18	323.6	95.2	1.43	342	69.67	1.86

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-311						GW-363		
Location	RS						EMWMF		
Date Sampled	02/05/01			07/31/01			04/04/01		
Program	GWPP			GWPP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	4.2	<MDA	.	3.3	.	.	.
Gross Beta	<MDA	.	6.8	<MDA	.	6	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	<MDA	.	180.1
Neptunium-237	.	.	.	.	.	.	0.87	0.67	0.87
Plutonium-239	.	.	.	.	.	.	<MDA	.	0.44
Radium-223/224/226	.	.	.	.	.	.	<MDA	.	0.71
Strontium-89/90	.	.	.	.	.	.	<MDA	.	1.66
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	15.65
Thorium-228	.	.	.	.	.	.	<MDA	.	0.66
Thorium-230	.	.	.	.	.	.	<MDA	.	0.95
Thorium-232	.	.	.	.	.	.	<MDA	.	0.92
Tritium	.	.	.	.	.	.	1071.64	368.99	581.72
Uranium-234	<MDA	.	0.34	<MDA	.	0.39	0.59	0.46	0.48
Uranium-235	<MDA	.	0.089	<MDA	.	0.38	<MDA	.	0.45
Uranium-236	.	.	.	.	.	.	<MDA	.	0.53
Uranium-238	<MDA	.	0.27	<MDA	.	0.39	<MDA	.	0.43

Sampling Point	GW-363								
Location	EMWMF								
Date Sampled	06/04/01			08/28/01			11/29/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.15	<MDA	.	1.84	<MDA	.	2.55
Gross Beta	2.42	1.66	1.61	5.85	2.14	2.41	<MDA	.	2.36
Americium-241	<MDA	.	0.65	<MDA	.	0.4	<MDA	.	0.42
Carbon-14	<MDA	.	177.02	<MDA	.	179	<MDA	.	218.06
Neptunium-237	<MDA	.	0.42	<MDA	.	0.4	<MDA	.	0.41
Plutonium-239	<MDA	.	0.9	<MDA	.	0.24	<MDA	.	0.74
Radium-223/224/226	0.78	0.49	0.52	1.44	0.71	0.53	0.96	0.64	0.77
Strontium-89/90	<MDA	.	1.58	<MDA	.	1.65	<MDA	.	1.8
Technetium-99	<MDA	.	13.43	<MDA	.	13.17	<MDA	.	9.67
Thorium-228	<MDA	.	0.84	<MDA	.	0.6	<MDA	.	0.71
Thorium-230	<MDA	.	0.84	0.7	0.49	0.45	1.24	0.8	0.72
Thorium-232	<MDA	.	0.73	<MDA	.	0.4	<MDA	.	0.76
Tritium	<MDA	.	753.69	32291.54	600.17	416.44	<MDA	.	643.64
Uranium-234	<MDA	.	1	0.59	0.38	0.3	<MDA	.	0.77
Uranium-235	<MDA	.	0.83	<MDA	.	0.37	<MDA	.	0.47
Uranium-236	<MDA	.	0.58	<MDA	.	0.33	<MDA	.	0.51
Uranium-238	<MDA	.	0.87	0.42	0.32	0.3	<MDA	.	0.54

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-364						GW-365		
Location	OLF						OLF		
Date Sampled	03/13/01			08/07/01			03/27/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	5.4	<MDA	.	5.9	<MDA	.	6.4
Gross Beta	8.7	4.2	6.1	<MDA	.	16	<MDA	.	6.2
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.73	0.3	0.18	0.36	0.26	0.36	<MDA	.	0.32
Uranium-235	<MDA	.	0.093	<MDA	.	0.22	<MDA	.	0.28
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	0.9	0.34	0.23	0.57	0.27	0.22	<MDA	.	0.28

Sampling Point	GW-365						GW-526		
Location	OLF						S3		
Date Sampled	03/27/01			08/07/01			02/01/01		
Program	GWPP			GWPP			WRRP		
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	5.1	<MDA	.	7.4	27.55	18.16	18.37
Gross Beta	<MDA	.	6.2	<MDA	.	16	<MDA	.	28.99
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.28	0.31	0.21	0.24	0.35	0.25	0.25
Uranium-235	<MDA	.	0.24	<MDA	.	0.099	<MDA	.	0.27
Uranium-236	.	.	.	.	.	.	<MDA	.	0.27
Uranium-238	<MDA	.	0.24	<MDA	.	0.24	0.26	0.22	0.24

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-526			GW-537					
Location	S3			OLF					
Date Sampled	08/06/01			02/06/01			08/02/01		
Program	WRRP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	155.82	33.76	23.76	<MDA			33	<MDA	
Gross Beta	718.01	47.83	34.91	600	79	75	670	51	35
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	750	15	13	940	19	13
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.72	0.36	0.21	.	.	.	.	.	.
Uranium-235	<MDA	.	0.22	.	.	.	.	.	.
Uranium-236	<MDA	.	0.12	.	.	.	.	.	.
Uranium-238	<MDA	.	0.27	.	.	.	.	.	.

Sampling Point	GW-616						GW-627		
Location	S3						BG		
Date Sampled	03/27/01			08/09/01			02/13/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	17	<MDA	.		33	<MDA	
Gross Beta	<MDA	.	20	<MDA	.		68	<MDA	
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.		13	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.29	<MDA	.		0.35	<MDA	
Uranium-235	<MDA	.	0.22	<MDA	.		0.25	<MDA	
Uranium-236	<MDA	.	0.28	<MDA	.		0.084	0.11	0.11
Uranium-238	<MDA	.	0.28	<MDA	.		.	.	0.076

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-627			GW-639					
Location	BG			EMWMF					
Date Sampled	07/26/01			04/05/01			06/13/01		
Program	GWPP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	17	.	.	.	<MDA	.	2.9
Gross Beta	<MDA	.	14	.	.	.	<MDA	.	4.52
Americium-241	.	.	.	.	.	.	<MDA	.	0.39
Carbon-14	.	.	.	<MDA	.	174.8	<MDA	.	17.8
Neptunium-237	.	.	.	<MDA	.	1.27	0.64	0.49	0.45
Plutonium-239	.	.	0.93	0.6	0.63	0.94	0.65	0.65	0.53
Radium-223/224/226	.	.	7.25	2.41	2.25	<MDA	.	.	1.53
Strontium-89/90	.	.	.	<MDA	.	1.5	2.19	0.18	1.83
Technetium-99	.	.	.	<MDA	.	47.16	<MDA	.	14.1
Thorium-228	.	.	0.39	0.27	0.27	<MDA	.	.	0.66
Thorium-230	.	.	0.64	0.36	0.33	1.11	0.62	0.55	.
Thorium-232	.	.	.	<MDA	.	0.3	<MDA	.	0.55
Tritium	.	.	.	<MDA	.	601.78	<MDA	.	629.7
Uranium-234	<MDA	.	0.21	<MDA	.	0.53	1.22	0.79	0.92
Uranium-235	<MDA	.	0.26	<MDA	.	0.38	<MDA	.	0.32
Uranium-236	.	.	.	<MDA	.	0.3	<MDA	.	0.57
Uranium-238	<MDA	.	0.17	<MDA	.	0.23	<MDA	.	1.01

Sampling Point	GW-639						GW-683		
Location	EMWMF						EXP-A		
Date Sampled	08/28/01			11/26/01			01/09/01		
Program	WRRP			WRRP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.22	<MDA	.	4.33	27	6.1	2.9
Gross Beta	<MDA	.	3.94	<MDA	.	4.4	77	10	10
Americium-241	1.14	0.49	0.26	<MDA	.	0.38	.	.	.
Carbon-14	<MDA	.	179	<MDA	.	204	.	.	.
Neptunium-237	0.51	0.4	0.47	<MDA	.	0.3	.	.	.
Plutonium-239	0.38	0.31	0.34	0.96	0.53	0.42	.	.	.
Radium-223/224/226	<MDA	.	0.68	2.49	0.9	0.81	.	.	.
Strontium-89/90	<MDA	.	1.63	<MDA	.	10.37	.	.	.
Technetium-99	<MDA	.	13.75	<MDA	.	17.89	49	11	15
Thorium-228	<MDA	.	0.63	<MDA	.	0.37	.	.	.
Thorium-230	0.66	0.48	0.59	0.47	0.31	0.3	.	.	.
Thorium-232	<MDA	.	0.38	<MDA	.	0.3	.	.	.
Tritium	12526.48	416.1	410.91	<MDA	.	578.56	.	.	.
Uranium-234	<MDA	.	0.45	<MDA	.	0.44	9.7	1.4	0.35
Uranium-235	<MDA	.	0.33	<MDA	.	0.3	0.42	0.25	0.21
Uranium-236	<MDA	.	0.38	<MDA	.	0.21	.	.	.
Uranium-238	<MDA	.	0.34	<MDA	.	0.21	18	2.3	0.33

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-683			GW-684					
Location	EXP-A			EXP-A					
Date Sampled	07/10/01			01/09/01			07/10/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	19	4.8	2.3	22	5.3	3.2	21	5.1	2.6
Gross Beta	27	5.7	6.7	40	6.8	7.2	34	7.5	9
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	33	8.4	13	35	10	15	30	8.3	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	8.7	1.4	0.34	6.3	0.99	0.19	7.5	1.2	0.31
Uranium-235	0.45	0.26	0.1	0.34	0.2	0.078	0.54	0.28	0.092
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	15	2.1	0.25	12	1.6	0.19	12	1.7	0.22

Sampling Point	GW-695						GW-703		
Location	EXP-B						EXP-B		
Date Sampled	01/16/01			07/16/01			01/22/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.6	<MDA	.	5	3.5	2.3	2.3
Gross Beta	42	7.7	8.4	46	7.6	7.3	53	7.6	7
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	39	8.7	13	48	8.5	13	54	9.1	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	1.4	0.42	0.24	1.3	0.4	0.21	1.8	0.46	0.23
Uranium-235	0.96 R	0.11	0.086	<MDA	.	0.21	0.15	0.14	0.081
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	0.98	0.35	0.27	1.4	0.4	0.071	1.6	0.43	0.16

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-703			GW-704					
Location	EXP-B			EXP-B					
Date Sampled	07/16/01			01/23/01					
Program	GWPP			GWPP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	4.5	6.2	3	2.5	.	.	.
Gross Beta	47	6.6	5.9	36	7.1	8.2	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	65	8.7	13	46	8.9	13	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	2	0.49	0.2	.	.	.	3.46	1.02	0.3
Uranium-235	<MDA	.	0.2	.	.	.	<MDA	.	0.24
Uranium-236	.	.	.	.	.	.	<MDA	.	0.13
Uranium-238	1.6	0.43	0.23	.	.	.	3.73	1.07	0.2

Sampling Point	GW-704						GW-706		
Location	EXP-B						EXP-B		
Date Sampled	07/17/01						01/23/01		
Program	GWPP			WRRP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.6	.	.	.	69	11	3.2
Gross Beta	16	5	6.4	.	.	.	310	16	7
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	.	.	.	360	13	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	1.46	0.69	0.41	.	.	.
Uranium-235	.	.	.	<MDA	.	0.39	.	.	.
Uranium-236	.	.	.	<MDA	.	0.35	.	.	.
Uranium-238	.	.	.	1.64	0.74	0.47	.	.	.

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-706								
Location	EXP-B								
Date Sampled	01/23/01						07/17/01		
Program	GWPP			WRRP			GWPP		
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	52	9.2	1.1				56	8.7	4.2
Gross Beta	300	15	6				140	11	7.8
Americium-241									
Carbon-14									
Neptunium-237									
Plutonium-239									
Radium-223/224/226									
Strontium-89/90									
Technetium-99	370	13	13				120	9.7	13
Thorium-228									
Thorium-230									
Thorium-232									
Tritium									
Uranium-234				24.22	5.54	0.98			
Uranium-235				1.05	0.72	0.59			
Uranium-236				0.65	0.53	0.53			
Uranium-238				40.85	8.79	0.89			

Sampling Point	GW-706			GW-712		
Location	EXP-B			EXP-W		
Date Sampled	07/17/01			01/02/01		07/02/01
Program	WRRP			WRRP		WRRP
Sample Type						
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha				<MDA		2.52
Gross Beta				5.28	1.69	2.25
Americium-241				<MDA		0.24
Carbon-14						
Neptunium-237				1.71	0.81	0.73
Plutonium-239						
Radium-223/224/226				3.13	1.04	0.91
Strontium-89/90				<MDA		1.48
Technetium-99				<MDA		20.95
Thorium-228						
Thorium-230						
Thorium-232						
Tritium						
Uranium-234	22.06	4.57	0.3	<MDA		0.45
Uranium-235	0.75	0.41	0.26	<MDA		0.28
Uranium-236	0.9	0.43	0.2	<MDA		0.12
Uranium-238	39.97	7.96	0.37	<MDA		0.39

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-713						GW-714		
Location	EXP-W						EXP-W		
Date Sampled	01/03/01			07/10/01			01/02/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.28	19.45	3.97	3.16	<MDA	.	1.76
Gross Beta	<MDA	.	2.42	28.57	3.43	2.92	3.31	1.79	2.09
Americium-241	<MDA	.	0.29	<MDA	.	0.31	<MDA	.	0.35
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	1.04	0.55	0.5	<MDA	.	1.27	0.8	0.48	0.54
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	1.49	0.74	0.84	1.05	0.53	0.41	5.93	1.41	0.71
Strontium-89/90	<MDA	.	1.54	<MDA	.	1.53	<MDA	.	1.62
Technetium-99	<MDA	.	19.82	<MDA	.	13.25	<MDA	.	21.14
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.45	0.28	0.26	<MDA	.	0.85	<MDA	.	0.42
Uranium-235	<MDA	.	0.3	<MDA	.	0.8	<MDA	.	0.3
Uranium-236	<MDA	.	0.19	<MDA	.	0.62	<MDA	.	0.25
Uranium-238	<MDA	.	0.3	<MDA	.	0.8	0.72	0.39	0.46

Sampling Point	GW-714						GW-715		
Location	EXP-W						EXP-W		
Date Sampled	07/02/01						01/02/01		
Program	WRRP			WRRP					
Sample Type							Dup		
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.71	8.02	2.04	1.91	5.19	1.71	1.73
Gross Beta	<MDA	.	2.12	10.89	2.14	2.27	9.88	1.91	2.02
Americium-241	<MDA	.	0.4	<MDA	.	0.44	0.48	0.31	0.24
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	<MDA	.	0.36	0.88	0.63	0.84	0.81	0.45	0.49
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	<MDA	.	0.9	4.8	1.24	0.23	2.51	0.95	0.91
Strontium-89/90	<MDA	.	2.14	<MDA	.	1.46	<MDA	.	1.46
Technetium-99	<MDA	.	14.35	<MDA	.	20.21	<MDA	.	22.08
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	1.06	0.5	0.43	2.29	0.81	0.47	2.65	0.85	0.43
Uranium-235	<MDA	.	0.43	<MDA	.	0.48	<MDA	.	0.39
Uranium-236	<MDA	.	0.4	<MDA	.	0.33	<MDA	.	0.38
Uranium-238	0.93	0.45	0.33	5.09	1.42	0.47	5.08	1.35	0.38

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-715						GW-724		
Location	EXP-W						EXP-C		
Date Sampled	07/09/01						01/25/01		
Program	WRRP						GWPP		
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	3.65	1.43	1.37	3	1.14	1	4.1	2.9	3.7
Gross Beta	3.99	1.43	1.96	5.13	1.05	0.95	41	7.2	7.8
Americium-241	<MDA	.	0.34	<MDA	.	0.16	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	0.46	0.32	0.36	<MDA	.	0.51	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	2.21	0.79	0.62	2.23	0.82	0.71	.	.	.
Strontium-89/90	<MDA	.	1.68	<MDA	.	1.77	.	.	.
Technetium-99	20.04	8.22	13.34	14.72	7.95	13.07	48	8.7	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	1.55	0.6	0.38	1.59	0.59	0.45	0.45	0.26	0.29
Uranium-235	<MDA	.	0.28	0.26	0.23	0.25	<MDA	.	0.33
Uranium-236	<MDA	.	0.25	0.13 R	0.15	0.11	.	.	.
Uranium-238	2.06	0.71	0.35	2.41	0.75	0.29	<MDA	.	0.26

Sampling Point	GW-724			GW-725					
Location	EXP-C			EXP-C					
Date Sampled	07/19/01			01/22/01			07/19/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	5	7.4	3.4	2.8	10	4.6	5.2
Gross Beta	38	6.1	5.7	22	5.2	6.1	36	7.1	8.2
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	43	9	13	29	8.5	13	37	8.4	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.48	0.25	0.27	2.2	0.53	0.28	3	0.68	0.28
Uranium-235	<MDA	.	0.088	<MDA	.	0.2	<MDA	.	0.1
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	0.26	0.17	0.071	3.2	0.64	0.16	2.9	0.67	0.2

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-738						GW-740		
Location	EXP-C						EXP-C		
Date Sampled	01/24/01			07/18/01			01/24/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.6	<MDA	.	5.1	2.6	1.7	0.77
Gross Beta	65	8.3	7.1	42	6.7	6.8	<MDA	.	7.2
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	81	9.3	13	65	8.8	13	<MDA	.	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.73	0.32	0.34	0.88	0.34	0.23	0.41	0.25	0.25
Uranium-235	<MDA	.	0.25	<MDA	.	0.23	<MDA	.	0.1
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	0.76	0.31	0.3	0.99	0.36	0.23	<MDA	.	0.25

Sampling Point	GW-740						GW-829		
Location	EXP-C						OLF		
Date Sampled	07/18/01						01/29/01		
Program	GWPP			GWPP			GWPP		
Sample Type				Dup					
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.8	<MDA	.	4.5	<MDA	.	4.9
Gross Beta	12	5.3	7.7	12	4.7	6.5	<MDA	.	6.4
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	13	7.9	13	<MDA	.	13
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.48	0.23	0.069	0.52	0.26	0.27	0.84	0.31	0.2
Uranium-235	<MDA	.	0.21	<MDA	.	0.087	<MDA	.	0.084
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	0.2	0.15	0.069	<MDA	.	0.24	0.68	0.28	0.16

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-829			GW-835					
Location	OLF			S3					
Date Sampled	08/01/01			02/06/01			05/16/01		
Program	GWPP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	6.6	.	.	.	.	.	.
Gross Beta	<MDA	.	6.5	.	.	.	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	.	.	.	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	0.79	0.33	0.2	144.3	34.02	1.03	146.6	32.97	0.98
Uranium-235	<MDA	.	0.25	7.99	2.68	0.82	7.25	2.74	0.8
Uranium-236	.	.	.	7.53	2.49	0.64	6.35	2.42	0.72
Uranium-238	0.56	0.3	0.34	386.6	89.76	0.74	381.4	83.74	1.09

Sampling Point	GW-835						GW-916		
Location	S3						EMWMF		
Date Sampled	08/09/01			11/14/01			04/02/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	.	.	.	.	.	.
Gross Beta	.	.	.	.	.	.	<MDA	.	168.32
Americium-241	.	.	.	.	.	.	1.31	0.64	0.59
Carbon-14	.	.	.	.	.	.	<MDA	.	0.33
Neptunium-237	.	.	.	.	.	.	1.19	0.69	0.83
Plutonium-239	.	.	.	.	.	.	<MDA	.	1.81
Radium-223/224/226	.	.	.	.	.	.	<MDA	.	16.06
Strontium-89/90	.	.	.	.	.	.	<MDA	.	0.25
Technetium-99	.	.	.	.	.	.	<MDA	.	0.38
Thorium-228	.	.	.	.	.	.	<MDA	.	0.32
Thorium-230	.	.	.	.	.	.	<MDA	.	566.57
Thorium-232	.	.	.	.	.	.	<MDA	.	0.25
Tritium	.	.	.	.	.	.	<MDA	.	0.34
Uranium-234	163.6	57.59	0.72	147.6	44.09	3.9	1.57	0.6	0.28
Uranium-235	10.48	5.16	0.89	7.27	3.99	2.66	<MDA	.	0.25
Uranium-236	8.19	4.19	1.36	9.78	4.61	1.85	<MDA	.	0.34
Uranium-238	420.5	145.7	1.6	437.3	126.4	1.85	0.93	0.44	0.23

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-916								
Location	EMWMF								
Date Sampled	04/02/01			05/30/01					
Program	WRRP			WRRP					
Sample Type	Dup						Dup		
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	<MDA	.	1.9	.	.	.
Gross Beta	.	.	.	6.35	1.3	1.52	.	.	.
Americium-241	.	.	.	<MDA	.	0.51	.	.	.
Carbon-14	<MDA	.	166.25	<MDA	.	181.05	<MDA	.	181.24
Neptunium-237	0.96	0.53	0.51	<MDA	.	0.49	<MDA	.	0.33
Plutonium-239	<MDA	.	0.25	<MDA	.	1	<MDA	.	0.73
Radium-223/224/226	0.88	0.59	0.77	<MDA	.	0.44	0.69	0.35	0.32
Strontium-89/90	<MDA	.	1.79	<MDA	.	1.76	<MDA	.	1.67
Technetium-99	<MDA	.	16.16	<MDA	.	16.16	<MDA	.	16.24
Thorium-228	<MDA	.	0.36	<MDA	.	0.56	<MDA	.	0.57
Thorium-230	0.44	0.33	0.42	<MDA	.	1.05	<MDA	.	0.61
Thorium-232	<MDA	.	0.31	<MDA	.	0.56	<MDA	.	0.53
Tritium	<MDA	.	592.72	<MDA	.	588.51	<MDA	.	616.99
Uranium-234	0.99	0.45	0.23	0.81	0.65	0.8	1.15	0.83	1.07
Uranium-235	<MDA	.	0.28	<MDA	.	0.77	<MDA	.	0.62
Uranium-236	<MDA	.	0.21	<MDA	.	0.53	<MDA	.	0.33
Uranium-238	1.14	0.49	0.25	<MDA	.	0.99	1.08	0.79	1.01

Sampling Point	GW-916								
Location	EMWMF								
Date Sampled	08/22/01						12/03/01		
Program	WRRP			WRRP					
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.97	3.56	1.66	1.52	<MDA	.	2.9
Gross Beta	7.03	1.78	1.63	7.88	1.76	1.59	4.19	1.5	2.03
Americium-241	<MDA	.	0.91	<MDA	.	1.14	<MDA	.	27.46
Carbon-14	<MDA	.	172.66	<MDA	.	173.73	<MDA	.	206
Neptunium-237	<MDA	.	0.47	0.45	0.3	0.26	<MDA	.	0.6
Plutonium-239	1.03	0.46	0.25	0.19 R	0.22	0.17	<MDA	.	0.3
Radium-223/224/226	<MDA	.	0.96	1.39	0.76	1.03	1.47	0.52	0.41
Strontium-89/90	9.11	0.56	1.55	6.7	0.5	1.71	<MDA	.	1.55
Technetium-99	<MDA	.	12.86	<MDA	.	12.88	<MDA	.	10.75
Thorium-228	<MDA	.	0.33	<MDA	.	0.44	<MDA	.	0.4
Thorium-230	<MDA	.	0.5	0.68	0.42	0.43	<MDA	.	0.49
Thorium-232	<MDA	.	0.33	<MDA	.	0.43	<MDA	.	0.47
Tritium	6923 R	353.26	408.33	<MDA R	.	409.47	<MDA	.	531.22
Uranium-234	0.7	0.36	0.24	0.67	0.34	0.21	<MDA	.	0.25
Uranium-235	<MDA	.	0.27	<MDA	.	0.13	<MDA	.	0.28
Uranium-236	0.21	0.2	0.2	<MDA	.	0.11	<MDA	.	0.18
Uranium-238	0.4	0.27	0.28	0.43	0.27	0.23	<MDA	.	0.3

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-916			GW-917					
Location	EMWMF			EMWMF					
Date Sampled	12/03/01			04/03/01			06/04/01		
Program	WRRP			WRRP			WRRP		
Sample Type	Dup								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.17	.	.	.	<MDA	.	1.33
Gross Beta	4.49	1.83	2.09	.	.	.	4.16	1.16	1.08
Americium-241	<MDA	.	0.28	.	.	.	<MDA	.	1.3
Carbon-14	<MDA	.	214	<MDA	.	174.11	<MDA	.	177.02
Neptunium-237	<MDA	.	0.42	3.84	1.26	0.47	0.3	0.24	0.2
Plutonium-239	<MDA	.	0.15	<MDA	.	0.94	<MDA	.	0.86
Radium-223/224/226	2.74	0.7	0.47	<MDA	.	0.75	<MDA	.	0.62
Strontium-89/90	<MDA	.	1.31	<MDA	.	1.43	<MDA	.	1.53
Technetium-99	<MDA	.	9.62	<MDA	.	16.04	<MDA	.	13.32
Thorium-228	0.35	0.24	0.25	0.51	0.33	0.27	<MDA	.	0.89
Thorium-230	<MDA	.	0.4	<MDA	.	0.6	<MDA	.	0.89
Thorium-232	<MDA	.	0.3	0.32	0.26	0.29	<MDA	.	0.76
Tritium	<MDA	.	547.87	<MDA	.	622.91	<MDA	.	628.28
Uranium-234	0.24	0.2	0.24	<MDA	.	0.7	<MDA	.	0.64
Uranium-235	<MDA	.	0.19	<MDA	.	0.45	<MDA	.	0.53
Uranium-236	<MDA	.	0.24	<MDA	.	0.32	<MDA	.	0.24
Uranium-238	<MDA	.	0.24	<MDA	.	0.31	0.72	0.52	0.55

Sampling Point	GW-917						GW-918		
Location	EMWMF						EMWMF		
Date Sampled	08/23/01			12/05/01			04/02/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.46	<MDA	.	1.51	.	.	.
Gross Beta	<MDA	.	2.09	<MDA	.	1.85	.	.	.
Americium-241	4.46	1.96	1.09	<MDA	.	1.54	.	.	.
Carbon-14	<MDA	.	179.64	<MDA	.	213.57	249.51	107.37	173.81
Neptunium-237	<MDA	.	0.34	<MDA	.	0.35	1.44	0.7	0.51
Plutonium-239	<MDA	.	0.41	<MDA	.	0.71	<MDA	.	0.5
Radium-223/224/226	0.84	0.58	0.84	2.83	1.02	0.97	3.48	1.1	0.53
Strontium-89/90	<MDA	.	1.6	<MDA	.	1.52	<MDA	.	1.79
Technetium-99	<MDA	.	13.38	<MDA	.	9.45	<MDA	.	16.65
Thorium-228	<MDA	.	0.6	<MDA	.	0.83	0.67	0.37	0.31
Thorium-230	0.63	0.45	0.56	<MDA	.	1.02	1.07	0.49	0.41
Thorium-232	<MDA	.	0.48	<MDA	.	0.97	0.59	0.35	0.29
Tritium	<MDA	.	414.13	<MDA	.	579.58	<MDA	.	601.41
Uranium-234	<MDA	.	0.34	1.02	0.64	0.79	0.94	0.43	0.34
Uranium-235	<MDA	.	0.24	<MDA	.	0.49	<MDA	.	0.21
Uranium-236	<MDA	.	0.28	<MDA	.	0.49	<MDA	.	0.22
Uranium-238	<MDA	.	0.33	<MDA	.	0.79	0.76	0.37	0.22

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-918								
Location	EMWMF								
Date Sampled	05/30/01			08/23/01			12/03/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	1.2	0.64	0.61	2.14	1.06	1.27	<MDA	.	1.64
Gross Beta	3.65	1.08	1.36	3.36	1.39	1.92	4.03	1.39	1.87
Americium-241	<MDA	.	0.36	<MDA	.	1.75	1.37	0.62	0.49
Carbon-14	793.33	120.72	177.86	1064.56	127.94	181.28	<MDA	.	214
Neptunium-237	<MDA	.	0.54	<MDA	.	0.28	0.72	0.4	0.34
Plutonium-239	<MDA	.	0.75	<MDA	.	0.31	<MDA	.	0.36
Radium-223/224/226	0.84	0.38	0.26	1.35	0.61	0.42	3.58	0.91	0.58
Strontium-89/90	<MDA	.	1.51	<MDA	.	1.83	<MDA	.	1.52
Technetium-99	<MDA	.	16.3	<MDA	.	13.17	<MDA	.	10.24
Thorium-228	<MDA	.	0.51	1.41	0.6	0.36	0.93	0.43	0.38
Thorium-230	<MDA	.	0.88	0.55	0.37	0.41	0.61	0.35	0.38
Thorium-232	<MDA	.	0.68	0.43	0.32	0.36	<MDA	.	0.29
Tritium	<MDA	.	594.62	1959.12	269.67	400.39	<MDA	.	555.39
Uranium-234	<MDA	.	1.07	0.27	0.22	0.27	<MDA	.	0.81
Uranium-235	<MDA	.	0.75	<MDA	.	0.26	<MDA	.	0.5
Uranium-236	<MDA	.	0.91	<MDA	.	0.23	<MDA	.	0.45
Uranium-238	<MDA	.	0.94	<MDA	.	0.23	0.96	0.83	0.9

Sampling Point	GW-919			GW-920					
Location	EMWMF			EMWMF					
Date Sampled	12/04/01			04/04/01			06/11/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.46	.	.	.	<MDA	.	25.66
Gross Beta	<MDA	.	1.99	.	.	.	60.74	60.38	59.07
Americium-241	<MDA	.	0.39	.	.	.	<MDA	.	0.31
Carbon-14	348.01	121.91	194.67	<MDA	.	179.1	261.61	108.98	176.42
Neptunium-237	0.36	0.29	0.36	<MDA	.	1.61	<MDA	.	0.34
Plutonium-239	<MDA	.	0.56	<MDA	.	1.25	<MDA	.	0.86
Radium-223/224/226	1.82	0.88	1.07	0.53	0.37	0.18	<MDA	.	1.16
Strontium-89/90	<MDA	.	1.52	<MDA	.	1.51	<MDA	.	2
Technetium-99	<MDA	.	10.76	<MDA	.	15.86	<MDA	.	15.9
Thorium-228	<MDA	.	0.68	<MDA	.	0.56	<MDA	.	0.75
Thorium-230	1.23	0.73	0.83	0.81	0.6	0.73	1.58	0.85	0.63
Thorium-232	<MDA	.	0.79	<MDA	.	0.64	<MDA	.	0.58
Tritium	<MDA	.	563.21	<MDA	.	568.02	<MDA	.	393.84
Uranium-234	2.14	0.94	0.59	<MDA	.	0.87	<MDA	.	0.52
Uranium-235	<MDA	.	0.64	<MDA	.	0.64	<MDA	.	0.53
Uranium-236	<MDA	.	0.41	<MDA	.	0.67	<MDA	.	0.41
Uranium-238	<MDA	.	0.69	0.64	0.5	0.52	<MDA	.	0.48

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-920						GW-921		
Location	EMWMF						EMWMF		
Date Sampled	08/23/01			12/04/01			04/03/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.24	<MDA	.	1.23	.	.	.
Gross Beta	<MDA	.	1.91	<MDA	.	1.77	.	.	.
Americium-241	<MDA	.	0.34	<MDA	.	28.76	.	.	.
Carbon-14	<MDA	.	179.58	295.98	123.06	198.68	<MDA	.	171.74
Neptunium-237	0.27	0.23	0.25	<MDA	.	0.37	1.67	0.78	0.59
Plutonium-239	<MDA	.	0.27	<MDA	.	0.55	<MDA	.	0.33
Radium-223/224/226	1.29	0.67	0.83	2.69	1.04	1.08	1.25	0.67	0.68
Strontium-89/90	<MDA	.	1.59	<MDA	.	1.5	21.8	0.85	1.49
Technetium-99	<MDA	.	13.38	<MDA	.	12.61	<MDA	.	16.03
Thorium-228	<MDA	.	0.61	<MDA	.	0.61	<MDA	.	0.41
Thorium-230	<MDA	.	0.51	1.1	0.73	0.97	0.7	0.4	0.32
Thorium-232	<MDA	.	0.45	<MDA	.	0.73	0.56	0.36	0.29
Tritium	<MDA	.	409.26	<MDA	.	574.87	<MDA	.	602.3
Uranium-234	0.25	0.2	0.25	0.91	0.57	0.52	0.42	0.29	0.24
Uranium-235	<MDA	.	0.18	<MDA	.	0.43	<MDA	.	0.25
Uranium-236	<MDA	.	0.22	<MDA	.	0.54	<MDA	.	0.22
Uranium-238	0.21	0.18	0.19	<MDA	.	0.52	<MDA	.	0.26

Sampling Point	GW-921								
Location	EMWMF								
Date Sampled	05/31/01			08/27/01		11/27/01			
Program	WRRP			WRRP		WRRP			
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.36	<MDA	.	1.38	0.98	0.78	0.96
Gross Beta	3.79	1.78	1.7	<MDA	.	1.95	2.29	1.31	1.86
Americium-241	<MDA	.	0.51	<MDA	.	0.25	<MDA	.	2.35
Carbon-14	<MDA	.	178.19	<MDA	.	179.67	221.23	116.25	190.12
Neptunium-237	<MDA	.	0.33	0.42	0.31	0.37	<MDA	.	0.26
Plutonium-239	<MDA	.	0.55	<MDA	.	0.23	<MDA	.	0.79
Radium-223/224/226	<MDA	.	0.83	1.17	0.55	0.57	2.93	1	0.85
Strontium-89/90	<MDA	.	1.51	<MDA	.	1.54	<MDA	.	1.66
Technetium-99	<MDA	.	15.95	<MDA	.	17.2	<MDA	.	11.7
Thorium-228	<MDA	.	2.68	<MDA	.	0.44	<MDA	.	0.77
Thorium-230	<MDA	.	2.01	<MDA	.	0.67	<MDA	.	0.51
Thorium-232	<MDA	.	1.76	<MDA	.	0.57	<MDA	.	0.2
Tritium	<MDA	.	575.37	982.3	284.04	453.32	<MDA	.	556.87
Uranium-234	0.66	0.56	0.62	<MDA	.	0.52	<MDA	.	0.49
Uranium-235	<MDA	.	0.58	<MDA	.	0.38	<MDA	.	0.47
Uranium-236	<MDA	.	0.31	<MDA	.	0.42	<MDA	.	0.49
Uranium-238	<MDA	.	0.61	0.53	0.4	0.5	<MDA	.	0.53

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-922								
Location	EMWMF								
Date Sampled	04/04/01			06/11/01			08/23/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	<MDA	.	2.34	<MDA	.	1.56
Gross Beta	.	.	.	8.34	2.49	2.31	2.59	1.4	1.99
Americium-241	.	.	.	<MDA	.	0.64	<MDA	.	0.12
Carbon-14	<MDA	.	181.82	219.14	107.7	175.82	196.65	110.93	182.2
Neptunium-237	<MDA	.	0.94	<MDA	.	0.45	0.79	0.42	0.34
Plutonium-239	<MDA	.	0.64	<MDA	.	0.65	<MDA	.	0.33
Radium-223/224/226	2	0.75	0.57	<MDA	.	0.76	<MDA	.	0.86
Strontium-89/90	<MDA	.	1.57	<MDA	.	1.69	<MDA	.	2.1
Technetium-99	<MDA	.	15.97	<MDA	.	15.72	<MDA	.	13.39
Thorium-228	<MDA	.	0.52	<MDA	.	0.83	<MDA	.	0.54
Thorium-230	1.35	0.82	0.87	<MDA	.	0.72	1.95	0.93	0.5
Thorium-232	<MDA	.	0.63	<MDA	.	0.45	<MDA	.	0.38
Tritium	<MDA	.	525.79	<MDA	.	431.82	<MDA	.	398.36
Uranium-234	1.06	0.68	0.72	<MDA	.	0.84	0.25	0.19	0.18
Uranium-235	<MDA	.	0.57	<MDA	.	0.51	<MDA	.	0.22
Uranium-236	<MDA	.	0.26	<MDA	.	0.46	<MDA	.	0.2
Uranium-238	0.96	0.62	0.56	<MDA	.	0.73	0.22	0.18	0.18

Sampling Point	GW-922			GW-923		
Location	EMWMF			EMWMF		
Date Sampled	12/04/01			04/02/01		06/06/01
Program	WRRP			WRRP		WRRP
Sample Type						
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.9	.	.	.
Gross Beta	3.69	1.41	1.92	.	.	.
Americium-241	<MDA	.	7.69	.	.	.
Carbon-14	343	120	192	<MDA	.	166.65
Neptunium-237	0.55	0.35	0.36	1.6	0.72	0.17
Plutonium-239	<MDA	.	0.67	<MDA	.	0.17
Radium-223/224/226	3.27	1.04	0.68	1.22	0.7	0.85
Strontium-89/90	<MDA	.	1.37	<MDA	.	1.43
Technetium-99	<MDA	.	10.49	<MDA	.	15.78
Thorium-228	<MDA	.	1.04	<MDA	.	0.35
Thorium-230	<MDA	.	1.04	<MDA	.	0.57
Thorium-232	<MDA	.	0.8	<MDA	.	0.39
Tritium	<MDA	.	564.36	<MDA	.	604.64
Uranium-234	0.46	0.37	0.37	2.99	0.92	0.34
Uranium-235	<MDA	.	0.23	<MDA	.	0.26
Uranium-236	<MDA	.	0.21	<MDA	.	0.28
Uranium-238	<MDA	.	0.41	1.67	0.64	0.3

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-923								
Location	EMWMF								
Date Sampled	06/07/01			08/28/01			12/03/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	7.61	2.44	2.31	<MDA	.	3.46
Gross Beta	.	.	.	9.77	2.32	2.5	4.22	1.47	1.99
Americium-241	.	.	.	<MDA	.	0.52	<MDA	.	0.3
Carbon-14	.	.	.	<MDA	.	181	<MDA	.	212
Neptunium-237	<MDA	.	0.52	1.13	0.66	0.56	<MDA	.	0.35
Plutonium-239	<MDA	.	0.59	<MDA	.	0.5	<MDA	.	0.39
Radium-223/224/226	1.62	1.07	1.48	3.78	1.1	0.98	2.68	0.83	0.66
Strontium-89/90	<MDA	.	1.55	1.43	0.01	1.42	<MDA	.	1.43
Technetium-99	<MDA	.	14.32	<MDA	.	15.19	11.42	5.84	9.65
Thorium-228	<MDA	.	0.72	0.87	0.5	0.39	<MDA	.	0.49
Thorium-230	2.12	1.02	0.76	1.36	0.66	0.59	0.86	0.46	0.4
Thorium-232	0.74	0.57	0.53	0.87	0.51	0.51	<MDA	.	0.5
Tritium	.	.	.	1867.94	284.93	428.83	<MDA	.	599.98
Uranium-234	2.19	0.94	0.64	2.79	1	0.58	0.83	0.36	0.22
Uranium-235	<MDA	.	0.45	<MDA	.	0.41	<MDA	.	0.11
Uranium-236	<MDA	.	0.48	<MDA	.	0.48	<MDA	.	0.09
Uranium-238	1.22	0.67	0.48	1.61	0.72	0.56	0.68	0.32	0.17

Sampling Point	GW-924								
Location	EMWMF								
Date Sampled	06/05/01			08/28/01			12/05/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.58	<MDA	.	1.36	<MDA	.	1.39
Gross Beta	<MDA	.	2.34	<MDA	.	1.94	<MDA	.	2.14
Americium-241	1.45	0.85	0.66	<MDA	.	0.48	<MDA	.	2.34
Carbon-14	<MDA	.	184.14	458	116	181	<MDA	.	216.21
Neptunium-237	<MDA	.	0.44	<MDA	.	0.7	<MDA	.	0.29
Plutonium-239	<MDA	.	0.76	<MDA	.	0.36	<MDA	.	0.73
Radium-223/224/226	<MDA	.	0.62	0.76	0.5	0.48	5.11	1.3	0.77
Strontium-89/90	<MDA	.	1.46	<MDA	.	1.62	<MDA	.	1.5
Technetium-99	<MDA	.	12.85	<MDA	.	14.55	<MDA	.	12.93
Thorium-228	<MDA	.	0.68	0.58	0.42	0.52	<MDA	.	0.74
Thorium-230	1.02	0.67	0.68	0.92	0.52	0.52	<MDA	.	1.17
Thorium-232	<MDA	.	0.6	<MDA	.	0.42	<MDA	.	0.87
Tritium	<MDA	.	393.24	1173.74	273.71	430.03	<MDA	.	554.79
Uranium-234	0.7	0.5	0.59	0.47	0.37	0.47	<MDA	.	0.85
Uranium-235	<MDA	.	0.49	<MDA	.	0.45	<MDA	.	0.54
Uranium-236	<MDA	.	0.22	<MDA	.	0.4	<MDA	.	0.54
Uranium-238	<MDA	.	0.51	<MDA	.	0.39	<MDA	.	0.72

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-925								
Location	EMWMF								
Date Sampled	04/03/01			05/31/01			08/27/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	<MDA	.	.	1.95	6.5	3.03
Gross Beta	.	.	.	<MDA	.	.	2.93	3.68	2.87
Americium-241	.	.	.	<MDA	.	.	2.19	<MDA	.
Carbon-14	<MDA	.	189.32	<MDA	.	.	188.09	<MDA	.
Neptunium-237	1.13	0.52	0.33	0.54	0.33	0.31	<MDA	.	0.38
Plutonium-239	<MDA	.	0.35	<MDA	.	.	0.65	0.31	0.26
Radium-223/224/226	1.78	0.81	0.66	<MDA	.	.	0.87	1.27	0.55
Strontium-89/90	4.28	0.4	1.6	<MDA	.	.	1.62	<MDA	.
Technetium-99	<MDA	.	17.54	<MDA	.	.	16.01	<MDA	.
Thorium-228	0.67	0.37	0.28	<MDA	.	.	5.71	<MDA	.
Thorium-230	1.05	0.5	0.44	<MDA	.	.	3.66	1.08	0.66
Thorium-232	0.83	0.42	0.28	<MDA	.	.	3.66	<MDA	.
Tritium	<MDA	.	630.07	<MDA	.	.	563.14	<MDA	.
Uranium-234	4.47	1.39	0.51	1.96	0.87	0.41	3.06	1.11	0.67
Uranium-235	<MDA	.	0.33	<MDA	.	.	0.26	<MDA	.
Uranium-236	<MDA	.	0.42	<MDA	.	.	0.39	<MDA	.
Uranium-238	2.2	0.86	0.45	1.28	0.68	0.35	0.68	0.49	0.58

Sampling Point	GW-925			GW-926					
Location	EMWMF			EMWMF					
Date Sampled	11/28/01			04/02/01			06/05/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	5.98	3.25	3.06	.	.	.	3.54	1.38	1.08
Gross Beta	8.15	3.23	3.05	.	.	.	11.06	2.15	1.9
Americium-241	1.3	0.64	0.46	.	.	.	<MDA	.	1.14
Carbon-14	<MDA	.	201.49	<MDA	.	.	166.38	<MDA	.
Neptunium-237	<MDA	.	0.52	1.32	0.67	0.54	0.34	0.29	0.16
Plutonium-239	<MDA	.	0.52	0.55	0.37	0.26	<MDA	.	0.68
Radium-223/224/226	<MDA	.	0.86	1.18	0.71	0.91	<MDA	.	1.09
Strontium-89/90	<MDA	.	1.86	<MDA	.	.	1.84	<MDA	.
Technetium-99	12.8	7.7	12.76	<MDA	.	.	16.12	<MDA	.
Thorium-228	<MDA	.	0.7	<MDA	.	.	0.28	<MDA	.
Thorium-230	<MDA	.	0.85	<MDA	.	.	0.39	0.91	0.58
Thorium-232	<MDA	.	0.93	<MDA	.	.	0.26	<MDA	.
Tritium	<MDA	.	566.95	<MDA	.	.	597.73	<MDA	.
Uranium-234	<MDA	.	0.92	0.55	0.38	0.44	<MDA	.	0.82
Uranium-235	<MDA	.	0.68	<MDA	.	.	0.45	<MDA	.
Uranium-236	<MDA	.	0.52	<MDA	.	.	0.27	<MDA	.
Uranium-238	<MDA	.	1.05	<MDA	.	.	0.47	<MDA	.

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-926						GW-927		
Location	EMWMF						EMWMF		
Date Sampled	08/27/01			11/29/01			04/03/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.7	<MDA	.	2.01	.	.	.
Gross Beta	2.36	1.4	2.02	2.57	1.53	2.19	.	.	.
Americium-241	<MDA	.	0.35	<MDA	.	1.87	.	.	.
Carbon-14	356.26	113.54	180.88	<MDA	.	217.59	<MDA	.	185.25
Neptunium-237	<MDA	.	0.36	<MDA	.	0.49	2.99	1.11	0.68
Plutonium-239	0.55	0.36	0.28	<MDA	.	0.56	<MDA	.	0.28
Radium-223/224/226	0.75	0.49	0.7	1.43	0.71	0.78	<MDA	.	0.92
Strontium-89/90	<MDA	.	1.49	<MDA	.	1.58	<MDA	.	1.54
Technetium-99	<MDA	.	15.36	<MDA	.	9.77	<MDA	.	16.08
Thorium-228	<MDA	.	1.55	<MDA	.	0.94	<MDA	.	0.45
Thorium-230	<MDA	.	1.44	1.27	0.93	1.19	0.54	0.33	0.29
Thorium-232	1.82	1.23	0.92	<MDA	.	1.26	<MDA	.	0.32
Tritium	<MDA	.	424.42	<MDA	.	615.42	<MDA	.	637.15
Uranium-234	<MDA	.	0.52	<MDA	.	0.59	0.79	0.42	0.36
Uranium-235	<MDA	.	0.42	<MDA	.	0.56	0.32	0.28	0.26
Uranium-236	<MDA	.	0.33	<MDA	.	0.58	<MDA	.	0.23
Uranium-238	<MDA	.	0.51	<MDA	.	0.81	<MDA	.	0.36

Sampling Point	GW-927								
Location	EMWMF								
Date Sampled	05/30/01			08/22/01			12/05/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	1.47	0.82	0.8	<MDA	.	2.03	<MDA	.	1.35
Gross Beta	<MDA	.	1.88	<MDA	.	5.31	<MDA	.	1.82
Americium-241	<MDA	.	0.42	0.77	0.5	0.45	<MDA	.	6.83
Carbon-14	188.17	108.73	178.74	<MDA	.	172.15	<MDA	.	212
Neptunium-237	<MDA	.	0.41	<MDA	.	0.49	<MDA	.	0.22
Plutonium-239	<MDA	.	0.4	0.45	0.33	0.28	<MDA	.	0.82
Radium-223/224/226	<MDA	.	0.56	1.01	0.55	0.45	6.82	1.43	0.46
Strontium-89/90	<MDA	.	1.72	5.48	0.49	1.62	<MDA	.	1.38
Technetium-99	<MDA	.	15.7	<MDA	.	12.63	<MDA	.	10.95
Thorium-228	<MDA	.	0.88	0.54	0.33	0.26	<MDA	.	0.81
Thorium-230	1.64	0.89	0.8	0.53	0.34	0.38	1.39	0.77	0.81
Thorium-232	<MDA	.	0.66	<MDA	.	0.32	<MDA	.	0.62
Tritium	<MDA	.	585.06	<MDA	.	404.83	<MDA	.	578.44
Uranium-234	<MDA	.	0.85	0.7	0.38	0.36	1.25	0.72	0.8
Uranium-235	<MDA	.	0.52	<MDA	.	0.14	<MDA	.	0.57
Uranium-236	<MDA	.	0.46	<MDA	.	0.22	<MDA	.	0.46
Uranium-238	<MDA	.	0.79	<MDA	.	0.34	<MDA	.	0.65

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	NT-01						NT-03		
Location	EXP-SW						EXP-SW		
Date Sampled	01/10/01			07/12/01			03/21/01		
Program	GWPP			GWPP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	120	14	4.4	90	30	6.8	.	.	.
Gross Beta	230	15	8.3	4400	140	40	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	280	13	15	5900	44	13	58.46	10.5	16.29
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	55	6.1	0.3	18	2.3	0.18	131.8	28.24	0.49
Uranium-235	2.8	0.67	0.089	0.8	0.35	0.23	7.16	2.17	0.23
Uranium-236	.	.	.	.	.	.	4.54	1.52	0.42
Uranium-238	84	9	0.25	37	4.3	0.23	286.1	60.54	0.49

Sampling Point	NT-07						NT-08		
Location	EXP-SW						EXP-SW		
Date Sampled	03/22/01			09/18/01			03/22/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	.	.	.	.	.	.
Gross Beta	.	.	.	.	.	.	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	8.68	2.48	1.37	1.92	0.53	0.16	17.35	3.69	0.3
Uranium-235	<MDA	.	0.89	<MDA	.	0.19	1.02	0.5	0.33
Uranium-236	0.91	0.65	0.64	<MDA	.	0.13	0.85	0.43	0.21
Uranium-238	18.46	4.39	0.61	3.45	0.82	0.23	99.46	19.23	0.36

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	NT-08			NT-8-E					
Location	EXP-SW			EXP-SW					
Date Sampled	09/18/01			03/22/01			09/18/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	.	.	.	.	.	.
Gross Beta	.	.	.	.	.	.	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	9.41	1.95	0.31	1.71	0.62	0.34	2.64	0.64	0.25
Uranium-235	0.68	0.33	0.22	0.37	0.28	0.22	0.22	0.16	0.15
Uranium-236	0.4	0.24	0.2	<MDA	.	0.28	0.22	0.15	0.11
Uranium-238	29.36	5.49	0.27	6.14	1.51	0.3	16.47	2.88	0.16

Sampling Point	NT-8-W						S07		
Location	EXP-SW						EXP-SW		
Date Sampled	03/22/01			09/18/01			09/17/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	.	.	.	.	.	.
Gross Beta	.	.	.	.	.	.	.	.	.
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	487.22	22.96	23.82
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	2.69	0.87	0.34	2.4	0.92	0.08	1.53	0.56	0.27
Uranium-235	<MDA	.	0.24	0.11 R	0.16	0.08	<MDA	.	0.13
Uranium-236	<MDA	.	0.22	0.09 R	0.13	0.08	<MDA	.	0.2
Uranium-238	3.27	0.99	0.34	11.03	2.88	0.08	0.61	0.33	0.27

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	SS-1						SS-4		
Location	EXP-SW						EXP-SW		
Date Sampled	01/10/01			07/12/01			01/11/01		
Program	GWPP			GWPP			GWPP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	18	5.9	3.9	24	6.8	3.6	56	8.7	2.6
Gross Beta	64	10	10	67	8.9	8.5	140	11	7.7
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	64	11	15	61	8.7	13	200	12	15
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	13	1.8	0.28	12	1.7	0.18	.	.	.
Uranium-235	0.66	0.3	0.2	0.62	0.31	0.22	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	14	1.9	0.16	11	1.6	0.18	.	.	.

Sampling Point	SS-4								
Location	EXP-SW								
Date Sampled	01/11/01								
Program	GWPP			WRRP					
Sample Type	Dup						Dup		
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	48	8.2	3.7	.	.	.	.	.	.
Gross Beta	150	12	7.4	.	.	.	.	.	.
Americium-241
Carbon-14
Neptunium-237
Plutonium-239
Radium-223/224/226
Strontium-89/90
Technetium-99	210	12	15	.	.	.	.	.	.
Thorium-228
Thorium-230
Thorium-232
Tritium
Uranium-234	.	.	.	28.37	5.87	0.31	29.35	5.87	0.34
Uranium-235	.	.	.	0.86	0.44	0.32	1.78	0.67	0.13
Uranium-236	.	.	.	1.11	0.48	0.24	0.53	0.32	0.23
Uranium-238	.	.	.	52.1	10.48	0.27	52.98	10.29	0.29

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	SS-4								
Location	EXP-SW								
Date Sampled	07/11/01								
Program	GWPP			WRRP					
Sample Type						Dup			
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	60	9.5	4						
Gross Beta	180	13	9.7						
Americium-241	.	.	.						
Carbon-14	.	.	.						
Neptunium-237	.	.	.						
Plutonium-239	.	.	.						
Radium-223/224/226	.	.	.						
Strontium-89/90	.	.	.						
Technetium-99	180	10	13						
Thorium-228	.	.	.						
Thorium-230	.	.	.						
Thorium-232	.	.	.						
Tritium	.	.	.						
Uranium-234	.	.	.	19.09	4.38	0.5	20.49	4.45	0.48
Uranium-235	.	.	.	0.86	0.5	0.48	1.02	0.53	0.27
Uranium-236	.	.	.	0.48	0.35	0.37	0.82	0.44	0.24
Uranium-238	.	.	.	39.2	8.54	0.48	37.57	7.78	0.36

Sampling Point	SS-5						SS-6		
Location	EXP-SW						EXP-SW		
Date Sampled	01/11/01			07/11/01			01/11/01		
Program	WRRP			WRRP			WRRP		
Sample Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.						
Gross Beta	.	.	.						
Americium-241	.	.	.						
Carbon-14	.	.	.						
Neptunium-237	.	.	.						
Plutonium-239	.	.	.						
Radium-223/224/226	.	.	.						
Strontium-89/90	.	.	.						
Technetium-99	111.97	13.98	19.79	119.67	13.91	19.91	32.28	12.72	20.49
Thorium-228	.	.	.						
Thorium-230	.	.	.						
Thorium-232	.	.	.						
Tritium	.	.	.						
Uranium-234	21.24	4.43	0.46	11.69	2.57	0.33	4.41	1.18	0.25
Uranium-235	0.99	0.49	0.32	0.86	0.44	0.31	<MDA	.	0.29
Uranium-236	0.95	0.47	0.43	0.62	0.35	0.23	0.13 R	0.15	0.12
Uranium-238	38.09	7.62	0.36	19.69	4.08	0.44	7.99	1.88	0.23

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	SS-6			SS-6.6					
Location	EXP-SW			EXP-SW					
Date Sampled	07/11/01			03/22/01					
Program	WRRP			WRRP					
Sample Type							Dup		
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	.	.	.	4.1	1.24	0.88	2.27	0.95	0.86
Gross Beta	.	.	.	2.73	1.24	1.72	2.89	1.25	1.71
Americium-241	.	.	.	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13.36	<MDA	.	.	16.3	<MDA	.
Thorium-228	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.	.	.	.
Tritium	.	.	.	.	.	.	.	.	.
Uranium-234	2.09	0.7	0.31	0.68	0.37	0.35	0.93	0.43	0.31
Uranium-235	0.28	0.25	0.26	<MDA	.	0.23	<MDA	.	0.22
Uranium-236	<MDA	.	0.2	<MDA	.	0.29	<MDA	.	0.19
Uranium-238	3.81	1.07	0.38	1.33	0.53	0.31	1.45	0.55	0.31

Sampling Point	SS-7					
Location	EXP-SW					
Date Sampled	03/22/01			09/18/01		
Program	WRRP				WRRP	
Sample Type						
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	1.41	0.71	0.72	.	.	.
Gross Beta	<MDA	.	1.66	8.59	2.37	2.61
Americium-241	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.
Technetium-99	<MDA	.	16.2	<MDA	.	18.5
Thorium-228	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.
Tritium	.	.	.	.	.	.
Uranium-234	0.34	0.23	0.19	2.26	0.56	0.18
Uranium-235	<MDA	.	0.2	0.19	0.14	0.14
Uranium-236	<MDA	.	0.18	0.16	0.12	0.09
Uranium-238	0.64	0.33	0.21	3.75	0.82	0.24

APPENDIX D.3: CY 2001 MONITORING DATA FOR THE BEAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	SS-8					
Location	EXP-SW					
Date Sampled	03/22/01		09/18/01			
Program	WRRP		WRRP			
Sample Type						
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.06	.	.	.
Gross Beta	1.78	1.12	1.61	4.82	2.3	2.66
Americium-241	.	.	.	.	.	.
Carbon-14	.	.	.	.	.	.
Neptunium-237	.	.	.	.	.	.
Plutonium-239	.	.	.	.	.	.
Radium-223/224/226	.	.	.	.	.	.
Strontium-89/90	.	.	.	.	.	.
Technetium-99	<MDA	.	16	<MDA	.	15.25
Thorium-228	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.
Thorium-232	.	.	.	.	.	.
Tritium	.	.	.	.	.	.
Uranium-234	<MDA	.	1.16	0.38	0.26	0.28
Uranium-235	<MDA	.	0.74	<MDA	.	0.21
Uranium-236	<MDA	.	0.54	<MDA	.	0.11
Uranium-238	<MDA	.	0.52	<MDA	.	0.3

APPENDIX E

**CY 2001 MONITORING DATA FOR THE
UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME**

EXPLANATION

Sampling Point:

- GHK - Gum Hollow Branch Kilometer (surface water sampling location)
- GW - Groundwater Monitoring Well; Westbay well GW-722
- LRSPW - Exit point of the New Hope Pond Distribution Channel underdrain (surface water sampling location)
- NPR - North of Pine Ridge near the Scarboro Community (surface water sampling location)
- OF - Storm drain outfall (surface water sampling location)
- SCR - Spring sampling location in Union Valley
- STATION - Surface water sampling location in Upper East Fork Poplar Creek

Location:

- B4 - Beta-4 Security Pits
- B8810 - Building 88-10
- EXP - Exit Pathway monitoring location:
 - ! -E, -I, or -J: Maynardville Limestone Picket monitoring well.
 - ! -NPR: Surface water station located north of Pine Ridge
 - ! -SW: Onsite spring or surface water station
 - ! -SR: Along Scarboro Road in the gap through Pine Ridge
 - ! -UV: East of the Oak Ridge Reservation boundary in Union Valley
- FTF - Fire Training Facility
- GRID - Comprehensive Groundwater Monitoring Plan Grid Location
- NHP - New Hope Pond
- S2 - S-2 Site
- S3 - S-3 Ponds Site
- T0134 - Tank 0134-U
- T2331 - Tank 2331-U
- UOV - Uranium Oxide Vault
- WC - Waste Coolant Processing Area

Monitoring Program:

- GWPP - Y-12 Groundwater Protection Program
- WRRP - Water Resources Restoration Program

Sample Type:

- Dup - Field Duplicate Sample

Units:

- ft - feet (elevations are above mean sea level and depths are below grade)
- $\mu\text{g/L}$ - micrograms per liter
- mg/L - milligrams per liter
- mV - millivolts
- $\mu\text{mho}/\text{cm}$ - micromhos per centimeter
- NTU - nephelometric turbidity units
- pCi/L - picoCuries per liter
- ppm - parts per million

EXPLANATION (continued)

Notes:

Only the analytes that were detected above the reporting limits for the applicable monitoring program in at least one sample are included in this appendix. Additionally, results that are below the reporting limits are replaced with missing values (e.g., “<”) to emphasize the detected results. The following sections describe the analytes, reporting limits, and data qualifiers for each subappendix. A comprehensive list of the GWPP analytes, analytical methods, and reporting limits is provided in Appendix B, Table B.5.

E.1 Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals:

Results for all of the field measurements, miscellaneous analytes, and major ions are included in this appendix. The reporting limits for the major ions are shown in the following summary.

Analyte	Reporting Limit (mg/L)		Analyte	Reporting Limit (mg/L)	
	GWPP	WRRP		GWPP	WRRP
Cations			Anions		
Calcium	0.2	0.25	Alkalinity - HCO ₃	1.0	NA
Magnesium	0.2	0.05	Alkalinity - CO ₃	1.0	NA
Potassium	2.0	0.25	Chloride	0.2	0.1
Sodium	0.2	0.25	Fluoride	0.1	0.05
			Nitrate (as Nitrogen)	0.028	0.1
			Sulfate	0.25	0.1

The major ion results for the following samples are qualitative because the ion charge balance (relative percent difference [RPD]) exceeds 20%.

Sampling Point	Date Sampled	Ion Charge Balance RPD	Suspected Source of Error
GW-170	11/07/01	-23	High alkalinity
GW-620	10/18/01	21.9	Low alkalinity (high hydroxide)
GW-772	05/22/01	-21.9	High iron and manganese
GW-772 D	05/22/01	-22.9	High iron and manganese
GW-785	05/21/01	-47	High iron and manganese
GW-785	11/07/01	-46.5	High iron and manganese

Notes: D = field duplicate sample; iron and manganese ions are not included in the ion charge balance calculation, and when the metals are included for wells GW-772 and GW-785 the balances are within the acceptable range.

EXPLANATION (continued)

Results for all trace metals are included in Appendix E.1 except for molybdenum, thorium, and vanadium. None of the results for these metals were detected above the reporting limits (shown below) for any of the CY 2001 groundwater or surface water samples collected in the East Fork Regime and surrounding areas.

Analyte	Reporting Limit (mg/L)		Analyte	Reporting Limit (mg/L)	
	GWPP	WRRP		GWPP	WRRP
Aluminum	0.2	0.05	Lithium	0.01	0.01
Antimony (PMS)	0.0025	.	Manganese	0.005	0.005
Antimony	.	0.006	Mercury (CVAA)	0.0002	0.0002
Arsenic (PMS)	0.005	.	Molybdenum	0.05	.
Arsenic	.	0.005	Nickel (PMS)	0.005	.
Barium	0.004	0.005	Nickel	0.05	0.01
Beryllium	0.001	0.001	Selenium (PMS)	0.01	.
Boron	0.1	0.01	Selenium	.	0.005
Cadmium (PMS)	0.0005	.	Silver	0.02	0.005
Cadmium	.	0.001	Strontium	0.005	0.005
Chromium (PMS)	0.0025	.	Thallium (PMS)	0.0005	.
Chromium	0.02	0.005	Thallium	.	0.002
Cobalt	0.02	0.005	Thorium	0.2	.
Copper	0.02	0.005	Uranium (PMS)	0.0005	.
Iron	0.05	0.01	Uranium (KPA)	.	0.004
Lead (PMS)	0.0005	.	Vanadium	0.02	0.01
Lead	.	0.003	Zinc	0.05	0.01

All metals analyses were performed using the inductively coupled plasma (ICP) spectroscopy method unless otherwise noted.

- CVAA - Cold Vapor Atomic Absorption (EPA-7470)
- KPA - Kinetic Phosphorescent Analysis (ASTM-D5174-M)
- PMS - Plasma Mass Spectroscopy (EPA-200.8)

Groundwater samples collected from two monitoring for metals analysis by the ICP method during CY 2001 were diluted before analysis to obtain an optimum matrix, which elevated the reporting limits by the associated dilution factor. These samples were from well GW-108 collected in January and July (5X) and from well GW-253 collected in May (5X) and October (4X). The detected results are valid, but some metals may be present at concentrations below the elevated reporting limits.

The following symbols and qualifiers are used in Appendix E.1:

- . - Not analyzed or not applicable
- < - Analyzed but not detected at the project reporting level
- [] - Calculated value for total uranium (GW-108); high calcium concentration interferes with the KPA method, so uranium mass is calculated from isotopic activity by the laboratory.
- J - Estimated value; chromium or nickel ICP result when a PMS result is available.
- Q - Result is inconsistent with historical measurements
- R - Result does not meet data quality objectives

EXPLANATION (continued)

E.2 Volatile Organic Compounds:

The following volatile organic compounds were reported for at least one groundwater or surface water sample during CY 2001. Results for the compounds shown in bold typeface were detected in more than one sample and are included in this appendix.

Volatile Organic Compound	Reporting Limit (µg/L)		Volatile Organic Compound	Reporting Limit (µg/L)	
	GWPP	WRRP		GWPP	WRRP
Acetone	10	10	1,1-Dichloroethene	5	5
Acrolein	10	.	cis-1,2-Dichloroethene	5	5
Acrylonitrile	5	.	trans-1,2-Dichloroethene	5	5
Benzene	5	5	1,2-Dichloropropane	5	5
Bromochloromethane	5	.	cis-1,3-Dichloropropene	5	5
Bromodichloromethane	5	5	trans-1,3-Dichloropropene	5	5
Bromoform	5	5	Dimethylbenzene	5	5
Bromomethane	5	10	Ethanol	200	.
2-Butanone	5	10	Ethylbenzene	5	5
Carbon disulfide	5	5	Ethyl methacrylate	5	.
Carbon tetrachloride	5	5	2-Hexanone	5	10
Chlorobenzene	5	5	Iodomethane	5	.
Chloroethane	5	10	4-Methyl-2-pentanone	5	10
2-Chloroethyl vinyl ether	10	.	Methylene chloride	5	5
Chloroform	5	5	Styrene	5	5
Chloromethane	5	10	1,1,1,2-Tetrachloroethane	5	.
Dibromochloromethane	5	5	1,1,2,2-Tetrachloroethane	5	5
1,2-Dibromo-3-chloropropane	10	.	Tetrachloroethene	5	5
1,2-Dibromoethane	5	.	Toluene	5	5
Dibromomethane	5	.	1,1,1-Trichloroethane	5	5
1,2-Dichlorobenzene	5	.	1,1,2-Trichloroethane	5	5
1,4-Dichlorobenzene	5	.	Trichloroethene	5	5
1,4-Dichloro-2-butene	5	.	Trichlorofluoromethane	5	.
trans-1,4-Dichloro-2-butene	5	.	1,2,3-Trichloropropane	10	.
Dichlorodifluoromethane	5	.	Vinyl acetate	10	.
1,1-Dichloroethane	5	5	Vinyl chloride	2	2
1,2-Dichloroethane	5	5			

The other compounds (not shown in bold typeface) were not detected in samples collected during CY 2001 except for one detected result reported for each of the following compounds.

Compound	Sampling Location	Date Sampled	Result (µg/L)
2-Butanone	GW-253	10/29/01	2 J
2-Hexanone	GW-722-33	05/02/01	2 J
4-Methyl-2-pentanone	GW-722-33	05/02/01	2 J
Carbon disulfide	GW-220	10/23/01	3 J
Chlorobenzene	GW-230	08/01/01	1 J

Note: J = estimated value below the reporting limit

EXPLANATION (continued)

The following symbols and data qualifiers are used in Appendix D.2.

- . - Not analyzed or not applicable
- < - Analyzed but not detected at the project reporting level (also false-positive results for data provided by the WRRP)
- J - Positively identified; estimated concentration

E.3 Radiological Analytes:

The following summary shows the radiological analytes reported for at least one groundwater or surface water sample collected during CY 2001 in the East Fork Regime.

Analyte	No. of Results	No. Detected		Analyte	No. of Results	No. Detected	
		GWPP	WRRP			GWPP	WRRP
Gross Alpha	184	16	41	Thorium-228	18	0	.
Gross Beta	184	22	68	Thorium-230	18	10	.
Americium-241	18	1	.	Thorium-232	18	0	.
Iodine-129	18	0	.	Thorium-234	18	9	.
Neptunium-237	18	0	.	Tritium	15	0	.
Plutonium-237	18	0	.	Uranium-232	2	.	0
Plutonium-239/240	18	0	.	Uranium-234	51	17	17
Radium-223/224/226	18	5	.	Uranium-235	53	9	3
Strontium-89/90	15	0	.	Uranium-236	18	.	7
Technetium-99	60	2	3	Uranium-238	51	13	16

All of the results for gross alpha and gross beta are presented in the first part of Appendix E.3, followed by the results for isotopes.

The following notes apply to Appendix D.3:

- Result - Activity in picoCuries per liter (pCi/L)
- Error - Counting error (two standard deviations)
- MDA - Minimum detectable activity
- R - Result does not meet data quality objectives: activity that exceeds the MDA but is less than the associated error (e.g., uranium-235 at well GW-253).
- Q - Elevated activity unsupported by historical results for the sampling location (e.g., gross beta at well GW-170).

EXPLANATION (continued)

Additional Analytes Not Presented in Appendix E tables:

The Y-12 GWPP requested determination of the weight percent of uranium isotopes for groundwater samples from the following monitoring wells during CY 2001.

Location	Date	Total Uranium (mg/L)	Weight Percent			
			U-234	U-235	U-236	U-238
GW-204	05/23/01	0.095	0.007	0.65	0.022	99.32
GW-204	09/05/01	0.063	0.01	0.75	0.02	99.22
GW-204	11/12/01	0.032	0.008	0.75	0.023	99.22
GW-656	11/12/01	<	.	.	.	.
GW-771	11/05/01	<	.	.	.	.
GW-772	11/06/01	<	.	.	.	.
GW-782	04/18/01	0.002	.	8	.	91
GW-782 D	04/18/01	0.002	.	8.2	.	91
GW-782	09/05/01	0.0014	.	7.75	.	.
GW-782	10/16/01	0.0011	.	7.84	.	.
GW-784	11/07/01	<	.	.	.	.
GW-785	11/07/01	<	.	.	.	.

Notes: D = field duplicate sample; < not detected; . = analysis not performed; the weight percent values are only valid if the total uranium concentration > 0.02 mg/L.

The WRRP requested analyses of organic gases (ethane, ethylene, and methane) for groundwater samples collected from seven wells in the East Fork Regime during CY 2001. Because ethane and ethylene were not detected in any of these samples, only methane results are shown in the following summary.

Well Number	Location	Date Sampled	Methane ($\mu\text{g}/\text{L}$)
GW-151	NHP	01/11/01	< 5
GW-151	NHP	07/30/01	5
GW-154	NHP	01/11/01	7
GW-154	NHP	07/30/01	13
GW-223	NHP	01/11/01	140
GW-223	NHP	07/31/01	170
GW-253	S2	05/02/01	11
GW-253	S2	10/29/01	10
GW-618	EXP-E	05/02/01	27
GW-618	EXP-E	10/29/01	60
GW-762	GRIDJ3	01/16/01	87
GW-762 D	GRIDJ3	01/16/01	81
GW-762	GRIDJ3	07/30/01	62
GW-762 D	GRIDJ3	07/30/01	63
GW-832	NHP	01/11/01	< 5
GW-832	NHP	07/30/01	< 5

Note: D = field duplicate sample

APPENDIX E.1

FIELD MEASUREMENTS, MISCELLANEOUS ANALYTES, MAJOR IONS, AND TRACE METALS

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GHK2.51ESW	GHK2.51WSW		GW-108		GW-151		GW-153	
Location	EXP-NPR	EXP-NPR		S3		NHP		NHP	
Date Sampled	05/23/01	05/09/01	11/27/01	01/04/01	07/11/01	01/11/01	07/30/01	04/26/01	10/23/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	8:30	10:15	8:30	13:25	9:00	12:50	14:15	13:35	8:40
Measuring Point Elev. (ft)	.	.	.	999.00	999.00	916.17	916.17	921.64	921.64
Depth to Water (ft)	.	.	.	8.25	7.30	16.18	15.29	20.55	20.60
Groundwater Elevation (ft)	.	.	.	990.75	991.70	899.99	900.88	901.09	901.04
Conductivity ($\mu\text{mho}/\text{cm}$)	484	364	312	4,210	49,100	497	528	466	440
Dissolved Oxygen (ppm)	3.56	5.6	6.91	1.98	6.04	8.45	0.94	3.48	2.19
Iron ++ (mg/L)	.	.	.	.	.	0.03	0	.	.
Manganese ++ (mg/L)	.	.	.	.	.	0.1	0.4	.	.
Oxidation/Reduction (mV)	215	240	216	283	245	145	90	154	182
Temperature (degrees C)	13.8	14.4	12	16.2	21.3	14.4	17.9	14.8	15.1
Turbidity (NTU)	.	.	.	11	12	30	24	.	.
pH	6.51	6.97	7.11	5.38	5.6	7.49	7.24	7.79	7.66
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	370	224	249	.	.	.	.	400	406
Dissolved Solids (mg/L)	226	142	153	57,000	86,400	327	302	239	226
Suspended Solids (mg/L)	23	2	<	6	18.3	7	<	<	<
Turbidity (NTU)	19.4	3.44	3.41	.	.	.	.	7	3.28
pH	6.96	7.85	7.75	.	.	.	.	7.83	7.91
MAJOR IONS (mg/L)									
Calcium	73	28.8	33.3	11,400	12,700	56.4	58	46.5	42.9
Magnesium	4.13	9.07	10.2	1,150	1,170	25.5	27.2	19.5	19.4
Potassium	3.21	2.35	2.35	55.7	25.6	2.71	2.77	2.06	2.07
Sodium	1.07	2.29	2.61	568	488	7.56	7.82	8.7	9.81
Alkalinity as CO_3	<	<	<	<	<	<	<	<	<
Alkalinity as HCO_3	173	79.2	102	672	770	210	216	184	167
Chloride	0.941	0.978	1.03	158	228	16.4	18.2	14.5	16.7
Fluoride	<	<	<	<	<	0.13	<	0.194	0.186
Nitrate as N	0.0321	0.0454	0.0463	11,800	10,300	1.5	1.9	0.778	0.842
Sulfate	21.3	24.2	29.1	8.9	8	18	18.1	14.4	14.6
Charge balance	2.3	5.1	0.0	-11.0	-0.4	1.5	1.8	-1.1	0.4
TRACE METALS (mg/L)									
Aluminum	9.16	<	0.24	<	<	<	<	<	<
Antimony (PMS)	<	<	<	.	.	.	.	<	<
Arsenic (PMS)	<	<	<	.	.	.	.	<	<
Arsenic	.	.	.	.	.	.	.	.	.
Barium	0.0865	0.0591	0.0636	95.2	94.8	0.179	0.187	0.0448	0.0422
Beryllium	.	.	.	.	.	.	.	.	.
Boron	<	<	<	<	<	0.0808	0.0853	<	<
Cadmium (PMS)	<	<	<	.	.	.	.	<	<
Cadmium	.	.	.	.	.	.	.	.	.
Chromium (PMS)	0.00968	<	<	.	.	.	.	0.00268	<
Chromium	<	<	<	.	.	.	.	<	<
Cobalt	<	<	<	0.129	0.13	<	<	<	<
Copper	<	<	<	.	<	<	<	<	<
Iron	6.54	0.194	0.234	0.24	0.474	<	<	0.188	<
Lead (PMS)	0.00823	<	<	.	.	.	.	0.000563	0.000526
Lead	.	.	.	.	.	.	.	.	.
Lithium	<	<	<	0.547	0.677	<	<	<	<
Manganese	0.374	0.0303	0.0358	141	110	<	<	0.00693	<
Mercury (CVAAs)	<	<	<	<	<	.	.	<	<
Nickel (PMS)	0.0058	<	<	.	.	.	.	<	<
Nickel	<	<	<	0.15	0.159	<	<	<	<
Selenium (PMS)	<	<	<	.	.	.	.	.	0.0111
Selenium	.	.	.	.	.	.	.	.	.
Strontium	0.112	0.0919	0.11	33.4	31	0.522	0.554	0.185	0.162
Thallium (PMS)	<	<	<	.	.	.	.	<	<
Thallium	.	.	.	.	.	.	.	.	.
Uranium (PMS)	0.000889	<	<	[0.0205]	[0.0275]	.	.	0.00089	0.00117
Uranium (KPA)	.	.	.	.	.	.	.	.	.
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-154		GW-169		GW-170			
Location	NHP		EXP-UV		EXP-UV			
Date Sampled	01/11/01	07/30/01	05/01/01	07/31/01	01/10/01		05/01/01	
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type					Dup		Dup	
FIELD MEASUREMENTS								
Time Sampled	10:03	9:38	12:25	10:45	10:45	.	9:45	.
Measuring Point Elev. (ft)	911.70	911.70	932.12	932.12	932.63	.	932.63	.
Depth to Water (ft)	10.20	6.92	32.33	27.74	36.40	.	34.60	.
Groundwater Elevation (ft)	901.50	904.78	899.79	904.38	896.23	.	898.03	.
Conductivity ($\mu\text{mho}/\text{cm}$)	846	834	308	285	684	.	648	.
Dissolved Oxygen (ppm)	6.9	4.64	4.63	4.6	9.51	.	0.4	.
Iron ++ (mg/L)	0.05	0.36	0.01	0	0.19	.	0	.
Manganese ++ (mg/L)	0.2	0.7	0	0.2	0.4	.	0	.
Oxidation/Reduction (mV)	230	120	185	144	-295	.	-299	.
Temperature (degrees C)	13.6	23.4	17.6	15.3	10.3	.	14.1	.
Turbidity (NTU)	6	66	16	28	26	.	32	.
pH	7.27	7.24	6.97	5.92	11.55	.	11.62	.
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)								
Dissolved Solids (mg/L)	542	567	182	150	192	169	143	128
Suspended Solids (mg/L)	5	7.9	5.1	<	<	6	<	<
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	122	124	.	.	.	.	.	.
Magnesium	22.2	22.9	.	.	.	.	.	.
Potassium	7.16	9.36	.	.	.	.	.	.
Sodium	14.2	15.7	.	.	.	.	.	.
Alkalinity as CO ₃	<	<	<	<	32	32	16	16
Alkalinity as HCO ₃	348	328	144	128	<	<	<	<
Chloride	4.3	4.2	1.2	2.2	11.5	11.8	11.5	10
Fluoride	0.34	0.22	<	<	0.29	0.13	0.14	0.13
Nitrate as N	0.12	3.4	0.68	0.8	0.13	0.88	<	<
Sulfate	105	97.4	5.6	5.4	2.8	2.8	3	3.1
Charge balance	-3.2	0.2	.	.	.	.	.	.
TRACE METALS (mg/L)								
Aluminum	0.0938	<	.	.	.	.	.	.
Antimony (PMS)	.	.	.	.	.	.	.	.
Arsenic (PMS)	.	.	.	.	.	.	.	.
Arsenic	<	<	.	.	.	.	.	.
Barium	0.136	0.0962	.	.	.	.	.	.
Beryllium	<	<	.	.	.	.	.	.
Boron	0.101	0.143	.	.	.	.	.	.
Cadmium (PMS)	.	.	.	.	.	.	.	.
Cadmium	<	<	.	.	.	.	.	.
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	<	<	.	.	.	.	.	.
Cobalt	<	<	.	.	.	.	.	.
Copper	0.0066	<	.	.	.	.	.	.
Iron	0.318	0.0549	.	.	.	.	.	.
Lead (PMS)	.	.	.	.	.	.	.	.
Lead	<	<	.	.	.	.	.	.
Lithium	<	0.0115	.	.	.	.	.	.
Manganese	1.64	0.379	.	.	.	.	.	.
Mercury (CVAA)	.	.	.	.	.	.	.	.
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	<	<	.	.	.	.	.	.
Selenium (PMS)	.	.	.	.	.	.	.	.
Selenium	<	<	.	.	.	.	.	.
Strontium	0.44	0.499	.	.	.	.	.	.
Thallium (PMS)	.	.	.	.	.	.	.	.
Thallium	<	<	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	0.643	1.37	.	.	.	.	.	.
Zinc	0.0269	<	.	.	.	.	.	.

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-170				GW-171		GW-172	
Location	EXP-UV				EXP-UV		EXP-UV	
Date Sampled	07/31/01		11/07/01		01/29/01	08/01/01	01/29/01	08/01/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup	Dup	Dup	Dup				
FIELD MEASUREMENTS								
Time Sampled	9:45	.	10:25	.	10:40	9:30	13:20	12:55
Measuring Point Elev. (ft)	932.63	.	932.63	.	920.72	920.72	926.57	926.57
Depth to Water (ft)	34.85	.	37.20	.	8.94	7.73	18.90	18.40
Groundwater Elevation (ft)	897.78	.	895.43	.	911.78	912.99	907.67	908.17
Conductivity ($\mu\text{mho}/\text{cm}$)	686	.	759	.	460	433	698	710
Dissolved Oxygen (ppm)	1.85	.	0.58	.	5.93	1.35	3.08	1.31
Iron ++ (mg/L)	0	.	0.05	.	2.01	2.75	2.06	1.29
Manganese ++ (mg/L)	0.4	.	0	.	8.3	8.7	1.3	1.2
Oxidation/Reduction (mV)	-117	.	-87	.	17	32	-73	-95
Temperature (degrees C)	15.8	.	12.8	.	13.5	16.8	14.5	19.8
Turbidity (NTU)	25	.	27	.	19	21	19	30
pH	8.12 Q	.	11.6	.	6.6	6.9	7.35	6.92
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)								
Dissolved Solids (mg/L)	117	145	146	177	255	251	382	421
Suspended Solids (mg/L)	<	<	5.1	<	<	9.1	<	6.9
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	.	.	55.5	53.6	.	.	.	.
Magnesium	.	.	0.359	0.336	.	.	.	.
Potassium	.	.	7.87	7.85	.	.	.	.
Sodium	.	.	7.92	7.79	.	.	.	.
Alkalinity as CO ₃	16	28	2 Q	2 Q	<	<	<	<
Alkalinity as HCO ₃	<	<	50 Q	52 Q	216	212	325	352
Chloride	11.1	11.4	10.5	10.7	5.9	4.8	29.6	22.7
Fluoride	<	<	0.11	<	<	<	<	<
Nitrate as N	<	<	<	<	0.12	<	<	<
Sulfate	3.1	3.2	2.7	2.7	11.4	11.6	2.2	3.8
Charge balance	.	.	-23 R	.	.	.	.	.
TRACE METALS (mg/L)								
Aluminum	.	.	0.116	0.116	.	.	.	.
Antimony (PMS)	.	.	.	.	.	.	.	.
Arsenic (PMS)	.	.	<	<	.	.	.	.
Arsenic	.	.	.	.	.	.	.	.
Barium	.	.	0.0683	0.0677	.	.	.	.
Beryllium	.	.	<	<	.	.	.	.
Boron	.	.	0.027	0.0231	.	.	.	.
Cadmium (PMS)	.	.	.	.	.	.	.	.
Cadmium	.	.	<	<	.	.	.	.
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	.	.	<	<	.	.	.	.
Cobalt	.	.	<	<	.	.	.	.
Copper	.	.	<	<	.	.	.	.
Iron	.	.	1.16	1.03	.	.	.	.
Lead (PMS)	.	.	.	.	.	.	.	.
Lead	.	.	<	<	.	.	.	.
Lithium	.	.	0.017	0.0164	.	.	.	.
Manganese	.	.	0.0078	0.0068	.	.	.	.
Mercury (CVAA)	.	.	.	.	.	.	.	.
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	.	.	<	<	.	.	.	.
Selenium (PMS)	.	.	.	.	.	.	.	.
Selenium	.	.	<	<	.	.	.	.
Strontium	.	.	0.36	0.351	.	.	.	.
Thallium (PMS)	.	.	.	.	.	.	.	.
Thallium	.	.	<	<	.	.	.	.
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	.	.	.	.	.	.	.	.
Zinc	.	.	<	<	.	.	.	.

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-192		GW-193		GW-204			GW-207	
Location	B4		T2331		T0134			EXP-SR	
Date Sampled	04/24/01	10/17/01	01/08/01	07/12/01	05/23/01	09/05/01	11/12/01	05/02/01	10/30/01
Program	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	10:10	9:00	10:35	9:30	13:15	10:15	9:00	8:10	9:55
Measuring Point Elev. (ft)	1008.83	1008.83	934.17	934.17	958.77	958.77	958.77	898.80	898.80
Depth to Water (ft)	6.24	7.08	9.22	9.25	8.56	9.18	9.05	3.45	6.90
Groundwater Elevation (ft)	1002.59	1001.75	924.95	924.92	950.21	949.59	949.72	895.35	891.90
Conductivity ($\mu\text{mho}/\text{cm}$)	680	880	821	715	469	383	304	702	658
Dissolved Oxygen (ppm)	0.14	0.06	8.01	3.15	1.48	0.58	2.62	1.22	1.19
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	48	-109	-180	-203	89	-111	-191	-41	-39
Temperature (degrees C)	14.1	18.1	10	23.9	21.5	23.4	19	15	15.7
Turbidity (NTU)	.	.	37	12	.	.	.	.	.
pH	6.25	6.52	7.48	7.18	7.34	7.73	7.38	7.26	7.56
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	620	776	.	.	369	345	251	594	606
Dissolved Solids (mg/L)	366	474	580	406	223	199	143	354	379
Suspended Solids (mg/L)	5	6	<	<	<	<	<	<	<
Turbidity (NTU)	36.3	67.6	.	.	1.98	0.971	1.18	3.38	3.41
pH	6.61	6.77	.	.	7.66	7.98	7.64	7.33	7.6
MAJOR IONS (mg/L)									
Calcium	105	131	115	94	58.2	55	37.5	64.3	57.7
Magnesium	11	18.7	32.5	23.6	9.63	9.89	6.28	39.8	39.8
Potassium	<	<	9.44	7.74	2.61	3.04	2.17	3.18	3.29
Sodium	8.1	7.57	8.12	5.65	3.64	6.71	3.77	10.5	10.8
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	286	406	216	320	129	133	103	288	282
Chloride	22.7	17	6.8	4.3	4.02	5.03	2.18	1.38	1.39
Fluoride	0.153	0.303	0.6	0.49	0.861	0.814	0.81	0.194	0.218
Nitrate as N	<	<	1.3	<	1.28	0.0863	<	<	<
Sulfate	3.76	2.52	239	43	39.7	32	22.3	51.9	50.8
Charge balance	0.4	-1.5	-3.2	-2.5	3.5	5.5	-0.4	1.0	-0.3
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Antimony (PMS)	<	<	.	.	.	0.00357	<	<	<
Arsenic (PMS)	0.00644	0.0106	.	.	<	<	<	<	<
Arsenic	.	.	<	<	.	.	.	.	.
Barium	0.156	0.221	0.161	0.121	0.0726	0.0784	0.0611	0.0515	0.0545
Beryllium	.	.	<	<	.	.	.	.	.
Boron	<	<	0.0804	0.0959	<	0.142	<	0.123	0.126
Cadmium (PMS)	<	<	.	.	<	<	<	<	<
Cadmium	.	.	<	<	.	.	.	.	.
Chromium (PMS)	<	<	.	.	0.00276	<	<	<	<
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	5.29	8.46	<	<	0.0925	0.0738	0.221	0.415	0.351
Lead (PMS)	<	0.000962	.	.	0.000664	<	<	0.000758	0.00803
Lead	.	.	<	0.0045	.	.	.	.	.
Lithium	0.0151	0.0102	<	<	0.137	0.2	0.12	0.0342	0.0353
Manganese	1.97	2.3	0.406	0.356	0.0186	0.239	0.654	0.0159	0.0163
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	.	.	<	<	<	<	<
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	.	.	<	<	<	<	<
Selenium	.	.	<	<	.	.	.	.	.
Strontium	0.184	0.294	0.637	0.483	0.139	0.136	0.0944	0.557	0.569
Thallium (PMS)	<	<	.	.	<	<	<	<	<
Thallium	.	.	<	<	.	.	.	.	.
Uranium (PMS)	<	<	.	.	0.104	0.0637	0.0316	<	<
Uranium (KPA)	.	.	<	<	.	.	.	.	.
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-208		GW-219			GW-220		GW-223	
Location	EXP-SR		UOV			NHP		NHP	
Date Sampled	05/02/01	10/30/01	05/24/01	11/06/01		04/30/01	10/23/01	01/11/01	07/31/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP
Sample Type				Dup					
FIELD MEASUREMENTS									
Time Sampled	13:40	8:50	10:05	8:25	8:25	13:40	9:50	10:30	10:05
Measuring Point Elev. (ft)	897.72	897.72	935.84	935.84	935.84	915.84	915.84	911.82	911.82
Depth to Water (ft)	3.08	6.70	9.84	13.52	13.52	16.47	16.49	10.61	8.78
Groundwater Elevation (ft)	894.64	891.02	926.00	922.32	922.32	899.37	899.35	901.21	903.04
Conductivity ($\mu\text{mho}/\text{cm}$)	732	694	587	555	555	571	543	690	667
Dissolved Oxygen (ppm)	1.32	1.11	5.12	1.8	1.8	1.37	0.03	8.16	5.39
Iron ++ (mg/L)	.	.	.	.	.	.	.	0.25	0.14
Manganese ++ (mg/L)	.	.	.	.	.	.	.	0.3	0.25
Oxidation/Reduction (mV)	-136	-128	220	-96	-96	153	94	-25	-14
Temperature (degrees C)	15.7	14.6	16.6	13.2	13.2	15.8	15.7	15.1	19.5
Turbidity (NTU)	.	.	.	.	.	.	.	43	29
pH	7.63	8.02	6.84	7.07	7.07	7.52	7.45	6.4	7.16
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	624	631	517	499	514	498	504	.	.
Dissolved Solids (mg/L)	402	407	297	287	293	280	275	411	431
Suspended Solids (mg/L)	2	<	<	<	<	<	<	7	<
Turbidity (NTU)	12.5	11.3	1.68	0.785	0.785	2.65	2.51	.	.
pH	7.7	7.84	7.15	7.47	7.45	7.73	7.68	.	.
MAJOR IONS (mg/L)									
Calcium	85	71.4	84.4	80.5	81.2	58.6	56.9	84.7	103
Magnesium	27.2	27.5	11.1	8.15	8.32	25.6	26	11.3	13.5
Potassium	3.41	3.56	4.95	2.96	3.22	2.68	2.63	2	2.42
Sodium	16.6	17	9.1	13.5	13.7	5.17	5.19	10.5	13.3
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	218	226	240	228	242	222	232	270	264
Chloride	1.78	1.8	2.35	4.17	4.29	13.3	14.2	33.9	30.1
Fluoride	0.291	0.318	0.128	0.16	0.156	<	<	0.12	<
Nitrate as N	<	<	0.286	0.0563	0.0536	0.854	0.835	0.11	0.02
Sulfate	116	114	23.7	29.9	29.8	14.6	14.6	34.5	38
Charge balance	3.2	-2.2	2.4	0.4	-1.6	1.4	-1.2	-11.1	-0.2
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Antimony (PMS)	<	<	<	<	<	<	<	.	.
Arsenic (PMS)	<	<	<	<	<	<	<	.	.
Arsenic	.	.	.	.	.	.	.	<	<
Barium	0.0416	0.0408	0.07	0.0678	0.0694	0.106	0.104	0.236	0.3
Beryllium	.	.	.	.	.	.	.	<	<
Boron	0.241	0.244	<	<	<	<	<	0.0482	0.0656
Cadmium (PMS)	<	0.000616	<	<	<	<	<	.	.
Cadmium	.	.	.	.	.	.	.	<	<
Chromium (PMS)	<	<	0.0101	0.00325	0.00675	<	<	.	.
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	1.26	1.16	0.12	0.102	0.252	0.121	0.082	0.298	0.38
Lead (PMS)	0.00277	0.0026	0.00147	< R	0.0018 R	<	0.000639	.	.
Lead	.	.	.	.	.	.	.	<	<
Lithium	0.0336	0.0365	<	<	<	<	<	<	<
Manganese	0.0188	0.0188	0.0179	1.34	1.59	0.00529	<	0.563	0.724
Mercury (CVAA)	<	<	<	<	<	<	<	.	.
Nickel (PMS)	<	<	0.0199	0.215	0.248	<	<	.	.
Nickel	<	<	<	0.207 J	0.226 J	<	<	.	.
Selenium (PMS)	<	<	<	<	<	<	<	.	.
Selenium	.	.	.	.	.	.	.	<	<
Strontium	1.47	1.39	0.188	0.133	0.137	0.429	0.434	0.221	0.284
Thallium (PMS)	<	<	<	<	<	<	<	.	.
Thallium	.	.	.	.	.	.	.	<	<
Uranium (PMS)	<	<	0.569	0.6	0.636	<	<	.	.
Uranium (KPA)	.	.	.	.	.	.	.	0.0283	0.0353
Zinc	1.78	1.8	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-230		GW-232				GW-240	
Location	EXP-UV		EXP-UV				NHP	
Date Sampled	01/29/01	08/01/01	01/10/01	05/01/01	07/31/01	11/07/01	04/26/01	10/22/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	11:05	10:45	14:25	14:00	13:20	13:50	9:55	8:45
Measuring Point Elev. (ft)	923.14	923.14	931.42	931.42	931.42	931.42	922.90	922.90
Depth to Water (ft)	15.55	15.57	35.80	33.90	34.47	36.47	21.81	21.17
Groundwater Elevation (ft)	907.59	907.57	895.62	897.52	896.95	894.95	901.09	901.73
Conductivity ($\mu\text{mho}/\text{cm}$)	1021	1062	918	927	952	936	517	497
Dissolved Oxygen (ppm)	0.49	1.39	9.12	0.59	1.64	0.68	6.7	3.76
Iron ++ (mg/L)	2.22	2.11	0.03	0.01	0.01	0.01	.	.
Manganese ++ (mg/L)	1.1	1.7	0.1	0	0	0.1	.	.
Oxidation/Reduction (mV)	-63	-94	-88	-172	-142	-130	166	202
Temperature (degrees C)	14.5	18	9.5	17.4	19.9	14.4	13.9	15.4
Turbidity (NTU)	20	69	17	17	29	3	.	.
pH	6.22	6.88	10.03	10.18	8.17	9.85	7.37	7.42
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)							441	426
Dissolved Solids (mg/L)	578	637	549	541	571	532	247	247
Suspended Solids (mg/L)	<	11	<	<	<	<	<	<
Turbidity (NTU)	.	.	.	.	.	.	0.791	1.55
pH	.	.	.	.	.	.	7.5	7.61
MAJOR IONS (mg/L)								
Calcium	.	.	.	.	.	1.34	47.1	47.4
Magnesium	.	.	.	.	.	0.922	18.7	17.3
Potassium	.	.	.	.	.	5.84	<	<
Sodium	.	.	.	.	.	255	17.1	17.6
Alkalinity as CO ₃	<	<	164	160	168	80	<	<
Alkalinity as HCO ₃	388	408	274	272	292	378	172	166
Chloride	106	104	11.9	10.7	12.4	11.7	22.6	25.1
Fluoride	<	<	2.3	2.5	1.9	2.1	0.166	0.234
Nitrate as N	0.21	0.03	0.098	<	0.026	<	0.987	1.48
Sulfate	1.9	2.1	10.3	8.2	7.9	6	15.6	23
Charge balance	.	.	.	.	.	7.5	1.7	-0.7
TRACE METALS (mg/L)								
Aluminum	.	.	.	.	.	<	<	<
Antimony (PMS)	.	.	.	.	.	.	<	<
Arsenic (PMS)	.	.	.	.	.	.	<	<
Arsenic	.	.	.	.	.	<	.	.
Barium	.	.	.	.	.	0.0147	0.0395	0.0412
Beryllium	.	.	.	.	.	<	.	.
Boron	.	.	.	.	.	1.29	<	<
Cadmium (PMS)	.	.	.	.	.	.	<	<
Cadmium	.	.	.	.	.	<	.	.
Chromium (PMS)	.	.	.	.	.	.	<	<
Chromium	.	.	.	.	.	<	<	<
Cobalt	.	.	.	.	.	<	<	<
Copper	.	.	.	.	.	<	<	<
Iron	.	.	.	.	.	0.0483	<	0.0523
Lead (PMS)	.	.	.	.	.	.	<	<
Lead	.	.	.	.	.	<	.	.
Lithium	.	.	.	.	.	0.18	<	<
Manganese	.	.	.	.	.	<	<	<
Mercury (CVAA)	.	.	.	.	.	.	<	<
Nickel (PMS)	.	.	.	.	.	.	<	<
Nickel	.	.	.	.	.	<	<	<
Selenium (PMS)	.	.	.	.	.	.	<	<
Selenium	.	.	.	.	.	<	.	.
Strontium	.	.	.	.	.	0.405	0.0687	0.0831
Thallium (PMS)	.	.	.	.	.	<	<	<
Thallium	.	.	.	.	.	<	.	.
Uranium (PMS)	.	.	.	.	.	.	0.00378	0.00381
Uranium (KPA)	.	.	.	.	.	.	.	.
Zinc	.	.	.	.	.	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-251		GW-253		GW-381		GW-382	
Location	S2		S2		NHP		NHP	
Date Sampled	04/24/01	10/18/01	05/02/01	10/29/01	05/01/01	10/24/01	01/22/01	07/31/01
Program	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	13:10	8:20	13:45	13:45	9:10	10:10	14:20	14:30
Measuring Point Elev. (ft)	1003.80	1003.80	1004.24	1004.24	913.36	913.36	913.17	913.17
Depth to Water (ft)	16.74	22.97	12.68	24.65	10.73	11.13	11.35	11.18
Groundwater Elevation (ft)	987.06	980.83	991.56	979.59	902.63	902.23	901.82	901.99
Conductivity ($\mu\text{mho}/\text{cm}$)	980	593	5200	6440	754	829	656	653
Dissolved Oxygen (ppm)	0.11	0.15	1.15	2.16	0.15	0.17	0.64	2.57
Iron ++ (mg/L)	.	.	0.11	0.06	.	.	0.12	.
Manganese ++ (mg/L)	.	.	48	39	.	.	0.3	.
Oxidation/Reduction (mV)	229	302	262	308	-156	-149	122	-97
Temperature (degrees C)	14.9	13.1	17	16.8	15.6	18.5	15	20.9
Turbidity (NTU)	.	.	25	36	.	.	28	39
pH	6.01	6.59	5.38	5.8	7.42	7.22	7.54	7.11
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)	862	514	.	.	653	758	.	.
Dissolved Solids (mg/L)	632	325	5410	5280	330	414	387	502
Suspended Solids (mg/L)	<	3	5.7	<	<	13	12	11.4
Turbidity (NTU)	2.82	3.21	.	.	48.8	116	.	.
pH	6.53	6.88	.	.	7.56	7.35	.	.
MAJOR IONS (mg/L)								
Calcium	105	71.2	566	840	73	92.4	83.8	82.1
Magnesium	14.4	8.53	147	199	23.4	23.4	23.6	23.3
Potassium	3.08	2.16	13.2	17.3	2.68	3.09	5.15	4.95
Sodium	13.4	6.18	156	198	19.7	19.2	9.64	11
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	156	165	60	92	210	298	276	280
Chloride	7.88	4.75	121	146	82	66.6	48.7	53.5
Fluoride	0.958	1.21	6.7	3.5	<	<	0.13	0.1
Nitrate as N	55.7	20.4	831	1140	<	<	0.27	<
Sulfate	14.8	6.45	67.3	77	0.662	7.64	3.9	8.5
Charge balance	-4.0	-5.2	-16.1	-13.9	-0.2	-3.5	-2.4	-4.8
TRACE METALS (mg/L)								
Aluminum	0.248	<	4.17	3.3	<	<	<	<
Antimony (PMS)	<	<	.	.	<	<	.	.
Arsenic (PMS)	<	<	.	.	<	<	.	.
Arsenic	.	.	0.0067	<	.	.	<	<
Barium	0.103	0.0551	0.325	0.398	0.134	0.272	0.579	0.573
Beryllium	.	.	0.0107	0.0099	.	.	<	<
Boron	<	<	0.317	0.312	<	<	0.0257	0.0283
Cadmium (PMS)	0.118	0.0496	.	.	<	<	.	.
Cadmium	.	.	3.72	4.9	.	.	<	<
Chromium (PMS)	<	<	.	.	<	<	.	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	0.257	0.282	<	<	<	<
Copper	0.241	0.101	60.9	47.5	<	<	<	<
Iron	0.239	0.156	0.0271	<	4.73	9.21	0.715	6.44
Lead (PMS)	0.00114	0.000734	.	.	<	0.000521	.	.
Lead	.	.	0.0226	0.0213	.	.	<	<
Lithium	<	<	0.0753	0.0712	<	<	<	<
Manganese	3.41	0.959	48.4	60.9	0.195	0.457	0.0339	0.0438
Mercury (CVAA)	<	<	.	.	<	<	.	.
Nickel (PMS)	0.0316	0.00927	.	.	<	<	.	.
Nickel	<	<	2.06	2.65	<	<	<	<
Selenium (PMS)	<	<	.	.	<	<	.	.
Selenium	.	.	0.025	<	.	.	<	<
Strontium	0.182	0.219	1.08	1.49	0.134	0.206	0.293	0.293
Thallium (PMS)	0.00211	0.000935	.	.	<	<	.	.
Thallium	.	.	<	0.0119	.	.	<	<
Uranium (PMS)	0.00349	0.00183	.	.	<	<	.	.
Uranium (KPA)	.	.	<	<	.	.	<	0.0129
Zinc	<	<	6.29	6.29	<	<	0.0103	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-383			GW-605				GW-606	
Location	NHP			EXP-I				EXP-I	
Date Sampled	04/30/01	10/24/01		01/05/01		07/10/01		01/08/01	07/10/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type		Dup		Dup		Dup			
FIELD MEASUREMENTS									
Time Sampled	10:40	8:55	8:55	9:25	.	13:05	.	9:35	10:05
Measuring Point Elev. (ft)	908.77	908.77	908.77	919.06	.	919.06	.	919.59	919.59
Depth to Water (ft)	9.60	9.74	9.74	11.18	.	11.34	.	14.88	14.44
Groundwater Elevation (ft)	899.17	899.03	899.03	907.88	.	907.72	.	904.71	905.15
Conductivity ($\mu\text{mho}/\text{cm}$)	731	667	667	594	.	621	.	411	486
Dissolved Oxygen (ppm)	0.3	0.03	0.03	6.3	.	1.73	.	7.1	3.08
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	33	-71	-71	212	.	69	.	132	97
Temperature (degrees C)	16.3	18.5	18.5	15.9	.	19.2	.	11	20.3
Turbidity (NTU)	.	.	.	32	.	10	.	12	13
pH	7.24	7.06	7.06	6.69	.	6.9	.	9.63	8.64
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	640	609	612	.	.	.	.	.	.
Dissolved Solids (mg/L)	356	358	339	300	300	334	331	240	298
Suspended Solids (mg/L)	8	<	<	5	5	7.2	6.4	<	<
Turbidity (NTU)	12.5	11.4	11.3	.	.	.	.	.	.
pH	7.46	7.71	7.43	.	.	.	.	.	.
MAJOR IONS (mg/L)									
Calcium	95.1	87.6	88.5	78.2	74.6	80.8	81.4	24.1	39.4
Magnesium	12.3	12	12.1	18.1	17.1	18.4	18.3	24.4	24.5
Potassium	2.64	2.93	2.98	2.66	2.54	2.78	2.77	7.62	6.93
Sodium	14.1	14.7	14.9	11.6	11.1	12	11.9	6.68	7.01
Alkalinity as CO ₃	<	<	<	<	<	<	<	20	<
Alkalinity as HCO ₃	252	240	242	226	224	244	256	24	60
Chloride	50	43.1	41.7	18.5	18.3	19.3	23.4	34.6	36.1
Fluoride	<	<	<	0.23	0.24	0.1	<	0.15	0.11
Nitrate as N	<	<	<	0.46	0.36	0.17	0.17	4.8	5.8
Sulfate	18	19.2	20.9	30.2	30	31.3	31.5	83.6	92.9
Charge balance	-2.9	-2.7	-2.5	2.2	0.2	0.4	-2.3	-3.8	-1.3
TRACE METALS (mg/L)									
Aluminum	<	<	<	0.206	0.15	0.0689	0.0898	<	<
Antimony (PMS)	<	<	<	.	.	.	.	.	.
Arsenic (PMS)	<	<	<	.	.	.	.	.	.
Arsenic	.	.	.	.	.	.	.	.	.
Barium	0.643	0.623	0.629	0.0487	0.0462	0.0515	0.0515	0.0577	0.0835
Beryllium	.	.	.	.	.	.	.	.	.
Boron	<	0.111	0.112	0.0982	0.0918	0.092	0.0917	0.0331	0.0341
Cadmium (PMS)	<	<	<	.	.	.	.	.	.
Cadmium	.	.	.	.	.	.	.	.	.
Chromium (PMS)	0.00603	<	<	.	.	.	.	.	.
Chromium	<	<	<	0.0102	0.0088	0.0059	0.0085	<	<
Cobalt	<	<	<	.	.	.	.	.	.
Copper	<	<	<	.	.	.	.	.	.
Iron	0.583	0.896	0.887	0.313	0.261	0.203	0.258	<	<
Lead (PMS)	<	0.000555	<	.	.	.	.	.	.
Lead	.	.	.	.	.	.	.	.	.
Lithium	0.016	0.0172	0.017	.	.	.	.	0.0237	0.0221
Manganese	0.184	0.13	0.132	0.552	0.453	0.622	0.884	<	<
Mercury (CVAAs)	<	<	<	.	.	.	.	.	.
Nickel (PMS)	0.0115	<	<	.	.	.	.	.	.
Nickel	<	<	<	0.0121	0.0102	0.0161	0.0185	<	<
Selenium (PMS)	<	<	<	.	.	.	.	.	.
Selenium	.	.	.	.	.	.	.	.	.
Strontium	0.447	0.438	0.442	0.148	0.141	0.153	0.153	0.487	0.732
Thallium (PMS)	<	<	<	.	.	.	.	.	.
Thallium	.	.	.	.	.	.	.	.	.
Uranium (PMS)	<	<	<	.	.	.	.	.	.
Uranium (KPA)	.	.	.	0.0779	0.0813	0.0942	0.0935	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-618		GW-620		GW-656		GW-698	
Location	EXP-E		FTF		T0134		CPT	
Date Sampled	05/02/01	10/29/01	04/25/01	10/18/01	05/24/01	11/12/01	05/23/01	11/13/01
Program	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	10:10	10:15	13:15	10:15	13:20	10:35	10:00	8:55
Measuring Point Elev. (ft)	985.14	985.14	1015.54	1015.54	954.79	954.79	970.29	970.29
Depth to Water (ft)	14.30	15.12	25.79	29.40	10.28	10.45	38.06	42.94
Groundwater Elevation (ft)	970.84	970.02	989.75	986.14	944.51	944.34	932.23	927.35
Conductivity ($\mu\text{mho}/\text{cm}$)	673	697	1607	217	798	826	2430	2530
Dissolved Oxygen (ppm)	0.32	0.39	0.62	4.87	0.3	0.18	0.23	0.12
Iron ++ (mg/L)	0.18	0.21	.	.	.	.	.	.
Manganese ++ (mg/L)	1.2	2.5	.	.	.	.	.	.
Oxidation/Reduction (mV)	-10	-48	-52	68	5	-25	169	159
Temperature (degrees C)	17	17.1	15.7	15	18.1	20.1	17.2	16.4
Turbidity (NTU)	0	1	.	.	.	.	.	.
pH	7.12	6.57	11.62	10.6	6.77	6.81	6.95	7.17
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	1300	207	696	701	2080	2290
Dissolved Solids (mg/L)	407	357	317	75	467	432	1610	1500
Suspended Solids (mg/L)	<	<	<	<	<	<	<	6
Turbidity (NTU)	.	.	0.894	2.87	6.14	7.68	4.42	9.91
pH	.	.	11.8	10.52	6.94	6.89	7.06	6.96
MAJOR IONS (mg/L)								
Calcium	104	111	118	17.8	124	122	256	295
Magnesium	8.99	9.53	<	0.244	6.82	6.55	78.3	91.2
Potassium	4.62	4.78	14.4	19.1	2.21	2.27	4	4.86
Sodium	17.1	17.3	2.37	2.58	10.9	11.1	29.2	36
Alkalinity as CO_3	<	<	28	14.4	<	<	<	<
Alkalinity as HCO_3	306	332	<	<	218	226	266	280
Chloride	11.7	12.4	2.74	2.05	56	55.2	23.4	24.4
Fluoride	0.28	0.22	0.17	0.135	<	<	<	<
Nitrate as N	0.18	0.26	1.13	1.36	<	<	177	221
Sulfate	21.4	20.3	6.18	5.7	57	55.7	52.5	44.3
Charge balance	-0.9	-1.6	11.7	21.9 R	1.1	-0.5	2.2	2.0
TRACE METALS (mg/L)								
Aluminum	<	<	1.4	<	<	<	<	0.574
Antimony (PMS)	.	.	<	<	<	<	<	<
Arsenic (PMS)	.	.	<	<	<	<	<	<
Arsenic	<	<	.	.	.	.	.	.
Barium	0.0561	0.0566	0.0295	0.0282	0.17	0.169	0.276	0.352
Beryllium	<	<	.	.	.	.	.	.
Boron	0.112	0.123	<	<	<	<	<	<
Cadmium (PMS)	.	.	0.00051	<	<	<	<	0.000611
Cadmium	0.0047	0.0054	.	.	.	.	.	.
Chromium (PMS)	.	.	<	<	0.0672	0.00456	<	<
Chromium	<	<	<	<	0.0638 J	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	0.238	0.237	0.165	<	1.03	1.09	0.166	0.512
Lead (PMS)	.	.	<	<	<	<	0.0027	<
Lead	<	<	.	.	.	.	.	.
Lithium	<	<	0.0243	0.0232	<	<	<	<
Manganese	1.49	1.58	<	<	0.393	0.518	0.299	0.353
Mercury (CVAA)	.	.	<	<	<	<	0.00067	0.00137
Nickel (PMS)	.	.	<	<	0.0695	0.0321	0.00536	0.00868
Nickel	<	<	<	<	0.0708 J	<	<	<
Selenium (PMS)	.	.	<	<	<	<	<	<
Selenium	<	<	.	.	.	.	.	.
Strontium	0.201	0.217	0.379	0.365	0.231	0.225	0.806	1.02
Thallium (PMS)	.	.	<	<	<	<	<	<
Thallium	<	<	.	.	.	.	.	.
Uranium (PMS)	.	.	<	<	<	<	0.00124	0.00123
Uranium (KPA)	<	<	.	.	.	.	.	.
Zinc	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-722-06				GW-722-10			
Location	EXP-J				EXP-J			
Date Sampled	02/20/01	05/01/01	07/31/01	10/30/01	02/21/01	05/03/01	08/02/01	11/05/01
Program	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	11:30	10:00	9:35	12:40	15:30	8:35	9:45	8:40
Measuring Point Elev. (ft)								
Depth to Water (ft)	67.41	.	71.16	.	68.42	.	72.14	.
Groundwater Elevation (ft)								
Conductivity ($\mu\text{mho}/\text{cm}$)	943	1168	908	1221	860	724	849	995
Dissolved Oxygen (ppm)	13.53	5.79	7.41	5.78	14.73	6.98	16.89	6.31
Iron ++ (mg/L)	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	-75	-17	-23	158	7	179	10	240
Temperature (degrees C)	13.7	17.5	17.4	21.3	13.2	19	16.5	15.9
Turbidity (NTU)	.	17	.	5	.	7	.	11
pH	7.08	8.08	6.87	7.77	7.03	8.39	7.68	7.52
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)	998	.	975	.	880	.	849	.
Dissolved Solids (mg/L)	548	604	589	527	483	479	509	471
Suspended Solids (mg/L)	<	<	<	<	<	<	<	<
Turbidity (NTU)	5.47	.	2.96	.	2.27	.	0.891	.
pH	8.11	.	8.12	.	7.92	.	8.11	.
MAJOR IONS (mg/L)								
Calcium	18.2	18.8	18.1	19.2	31	31.5	30.9	31.1
Magnesium	14.4	13.5	14	13.5	22.2	21.8	21.2	21.6
Potassium	5.15	7.27	5.02	7.26	3.83	5.3	3.9	5.21
Sodium	177	170	180	188	120	117	120	130
Alkalinity as CO_3	<	<	<	16 Q	<	<	<	16 Q
Alkalinity as HCO_3	232	220	240	204	198	202	208	204
Chloride	146	133	134	134	122	110	110	107
Fluoride	0.889	1.2	0.919	0.96	0.906	1	0.734	0.92
Nitrate as N	<	<	<	<	<	<	<	<
Sulfate	49.7	52.1	52.4	49.4	63.5	60.1	60.3	54.3
Charge balance	0.4	1.8	1.5	6.0	-0.4	0.8	0.3	2.9
TRACE METALS (mg/L)								
Aluminum	<	<	<	<	<	<	<	<
Antimony (PMS)	<	.	<	.	<	.	<	.
Arsenic (PMS)	<	.	0.00802	.	<	.	0.00747	.
Arsenic	.	<	.	<	.	<	.	<
Barium	0.0394	0.0365	0.0364	0.0354	0.061	0.0611	0.0607	0.0574
Beryllium	.	<	.	<	.	<	.	<
Boron	0.672	0.671	0.704	0.708	0.443	0.45	0.445	0.444
Cadmium (PMS)	<	.	<	.	<	.	<	.
Cadmium	.	<	.	<	.	<	.	<
Chromium (PMS)	<	.	<	.	0.00363	.	<	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	0.128	0.0511	0.112	0.083	0.216	0.156	0.172	0.23
Lead (PMS)	0.000998	.	<	.	<	.	<	.
Lead	.	<	.	<	.	<	.	<
Lithium	0.124	0.162	0.13	0.171	0.0889	0.117	0.0914	0.12
Manganese	0.00736	0.0066	0.00655	0.0078	0.00545	<	<	<
Mercury (CVAA)	<	.	<	.	<	.	<	.
Nickel (PMS)	<	.	<	.	<	.	<	.
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	<	.	0.0515	.	0.0136	.	0.0477	.
Selenium	.	<	.	<	.	<	.	<
Strontium	4.11	4.08	4.24	4.09	2.79	3.02	3.04	3.05
Thallium (PMS)	<	.	<	.	<	.	<	.
Thallium	.	<	.	<	.	<	.	<
Uranium (PMS)	<	.	<	.	<	.	<	.
Uranium (KPA)	.	<	<	<	0.0122	<	<	<
Zinc	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-722-14					GW-722-17					
Location	EXP-J					EXP-J					
Date Sampled	02/26/01		05/07/01		08/07/01		11/06/01		02/26/01	05/07/01	08/08/01
Program	GWPP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	GWPP	Dup	
Sample Type	Dup										
FIELD MEASUREMENTS											
Time Sampled	12:00	12:00	11:00	11:00	8:25	15:10	12:45	10:45	10:45		
Measuring Point Elev. (ft)											
Depth to Water (ft)	69.53	69.53	.	72.65	.	69.53	.	73.11	73.11		
Groundwater Elevation (ft)											
Conductivity ($\mu\text{mho}/\text{cm}$)	547	547	837	535	612	556	558	550	550		
Dissolved Oxygen (ppm)	12.45	12.45	9.48	17.91	5.68	9.6	8.31	16.76	16.76		
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	109	109	182	80	183	109	177	132	132		
Temperature (degrees C)	14.1	14.1	17.3	18.3	15.5	14.7	16.8	16.9	16.9		
Turbidity (NTU)	.	.	13	.	19	.	18	.	.		
pH	6.86	6.86	8.01	7.36	7.43	6.9	7.67	7.28	7.28		
MISCELLANEOUS ANALYTES											
Conductivity ($\mu\text{mho}/\text{cm}$)	563	562	.	559	.	570	.	573	575		
Dissolved Solids (mg/L)	294	293	309	209	224	295	310	329	328		
Suspended Solids (mg/L)	1	6	<	3	<	<	<	<	2		
Turbidity (NTU)	4.35	4.21	.	5.97	.	5.83	.	0.817	1.78		
pH	7.69	7.79	.	7.92	.	7.91	.	7.84	7.86		
MAJOR IONS (mg/L)											
Calcium	52.5	51.3	49.9	52.4	53.6	52.5	47.8	47.2	46.5		
Magnesium	28.1	27.7	27.4	27.7	27.8	29	28.7	27.4	27.3		
Potassium	<	<	2.09	<	2.17	2.07	2.24	<	<		
Sodium	25.7	25.4	22.2	25.2	21.3	24.9	23.6	30	29.7		
Alkalinity as CO ₃	<	<	<	<	16 Q	<	<	<	<		
Alkalinity as HCO ₃	232	200	222	240	216	204	210	224	228		
Chloride	24.7	23.7	21	21.8	19.8	33.7	27.8	34	33.8		
Fluoride	0.33	0.33	0.35	0.322	0.32	0.387	0.4	0.444	0.45		
Nitrate as N	1.02	1.02	1.1	0.823	0.68	1.29	1.1	0.783	0.764		
Sulfate	23.9	23.5	23.2	22.9	21.6	30.8	28	31.8	31.2		
Charge balance	1.1	6.2	1.3	0.2	2.0	3.0	1.4	-2.2	-3.1		
TRACE METALS (mg/L)											
Aluminum	<	<	<	<	<	<	<	<	<		
Antimony (PMS)	<	<	.	<	.	<	.	<	<		
Arsenic (PMS)	<	<	.	<	.	<	.	<	<		
Arsenic	.	.	.	<	.	<	.	<	.		
Barium	0.103	0.0993	0.101	0.104	0.0984	0.084	0.0867	0.11	0.11		
Beryllium	.	.	<	.	<	.	<	.	.		
Boron	0.143	0.147	0.138	0.148	0.144	0.127	0.12	0.137	0.13		
Cadmium (PMS)	<	<	.	<	.	<	.	<	<		
Cadmium	.	.	.	<	.	<	.	<	.		
Chromium (PMS)	<	<	.	<	.	0.00297	.	<	<		
Chromium	<	<	<	<	<	<	<	<	<		
Cobalt	<	<	<	<	<	<	<	<	<		
Copper	<	<	<	<	<	<	<	<	<		
Iron	0.0666	0.0974	0.0185	0.0533	0.0185	0.137	<	0.0501	0.0506		
Lead (PMS)	<	0.00115	.	<	.	0.00055	.	<	<		
Lead	.	.	.	<	.	<	.	<	.		
Lithium	0.0193	0.019	0.0243	0.0218	0.0247	0.0203	0.0257	0.0253	0.0254		
Manganese	<	<	<	<	<	<	<	<	<		
Mercury (CVAAs)	<	<	.	<	.	<	.	<	<		
Nickel (PMS)	<	<	.	<	.	<	.	<	<		
Nickel	<	<	<	<	<	<	<	<	<		
Selenium (PMS)	<	<	.	0.0118	.	<	.	0.0209	0.0198		
Selenium	.	.	<	.	<	.	<	.	.		
Strontium	0.792	0.787	0.766	0.801	0.794	0.848	0.855	0.867	0.858		
Thallium (PMS)	<	<	.	0.00069	.	<	.	0.00062	0.000619		
Thallium	.	.	.	<	.	<	.	<	.		
Uranium (PMS)	<	0.000562	.	<	.	<	.	<	<		
Uranium (KPA)	.	.	.	<	.	<	.	<	.		
Zinc	<	<	0.0108	0.0656	<	0.119	<	0.0703	<		

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-722-17	GW-722-20				GW-722-22			
Location	EXP-J	EXP-J				EXP-J			
Date Sampled	11/06/01	02/22/01	05/03/01	08/07/01	11/05/01	02/22/01	05/03/01	08/02/01	11/05/01
Program	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	9:45	10:35	10:40	9:20	12:35	10:35	9:55	11:00	9:50
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	69.15	.	72.65	.	69.15	.	72.14	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	706	528	563	516	525	537	1938	529	514
Dissolved Oxygen (ppm)	5.59	5.88	6.13	17.76	9.27	2.54	6.12	18	7.27
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	212	189	138	124	134	190	122	223	170
Temperature (degrees C)	15.3	12.4	19.1	17.1	19.3	12.4	18.3	17.8	18.5
Turbidity (NTU)	17	.	19	.	10	.	3	.	9
pH	6.86	6.61	7.52	7.41	7.32	6.6	7.7	7.98	7.37
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	.	536	.	540	.	542	.	530	.
Dissolved Solids (mg/L)	251	291	314	328	254	289	313	309	297
Suspended Solids (mg/L)	<	2	<	<	<	<	6.1	<	<
Turbidity (NTU)	.	1.57	.	1.03	.	0.906	.	0.398	.
pH	.	7.83	.	7.91	.	7.78	.	7.68	.
MAJOR IONS (mg/L)									
Calcium	49.9	50.9	44.7	51.2	50.5	51.9	52	52.5	51.7
Magnesium	29.2	29.9	25.9	29.6	29.7	28.8	28.8	27.3	27.8
Potassium	2.42	<	1.65	<	1.95	<	1.98	<	1.83
Sodium	22.9	16.9	14.1	17.5	16.6	20.4	20.1	19.6	17.6
Alkalinity as CO_3	16 Q	<	<	<	4 Q	<	<	<	8 Q
Alkalinity as HCO_3	204	204	206	216	204	216	218	242	224
Chloride	33	24.7	20.7	20.9	19.6	20.9	16.1	14.3	18.7
Fluoride	0.43	0.43	0.45	0.409	0.4	0.336	0.38	0.322	0.33
Nitrate as N	0.64	1.7	1.9	1.51	1.5	1.14	0.89	0.8	0.48
Sulfate	29.9	30.3	30.3	28.7	27.6	24.5	24.7	21.5	22.8
Charge balance	-0.6	1.7	-4.5	1.0	2.9	2.9	4.2	-0.4	-0.1
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Antimony (PMS)	.	<	.	<	.	<	.	<	.
Arsenic (PMS)	.	<	.	<	.	<	.	<	.
Arsenic	<	.	<	.	<	.	<	.	<
Barium	0.0788	0.0641	0.0633	0.071	0.0699	0.0953	0.0981	0.098	0.0931
Beryllium	<	.	<	.	<	.	<	.	<
Boron	0.133	<	0.0679	<	0.0796	0.113	0.115	0.119	0.102
Cadmium (PMS)	.	<	.	<	.	<	.	<	.
Cadmium	<	.	<	.	<	.	<	.	<
Chromium (PMS)	.	<	.	<	.	<	.	<	.
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.0153	0.0554	0.014	<	0.0174	<	0.0179	<	0.0881
Lead (PMS)	.	<	.	<	.	<	.	<	.
Lead	<	.	<	.	<	.	<	.	<
Lithium	0.0262	0.0135	0.0154	0.0166	0.0184	0.0144	0.0202	0.0148	0.0187
Manganese	<	<	<	<	<	<	<	0.00653	0.0078
Mercury (CVAA)	.	<	.	<	.	<	.	<	.
Nickel (PMS)	.	<	.	<	.	<	.	<	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	.	<	.	0.0123	.	<	.	0.0106	.
Selenium	<	.	<	.	<	.	<	.	<
Strontium	0.879	0.76	0.646	0.742	0.734	0.704	0.745	0.699	0.786
Thallium (PMS)	.	<	.	0.000622	.	<	.	<	.
Thallium	<	.	<	.	<	.	<	.	<
Uranium (PMS)	.	<	.	<	.	<	.	0.000541	.
Uranium (KPA)	<	.	<	.	<	.	<	.	<
Zinc	0.0104	<	<	<	<	<	<	0.0133	0.0838

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-722-26						GW-722-30		
Location	EXP-J						EXP-J		
Date Sampled	02/20/01	05/02/01		08/01/01	10/31/01		02/20/01	05/01/01	07/31/01
Program	GWPP	WRRP	WRRP	GWPP	WRRP	WRRP	GWPP	WRRP	GWPP
Sample Type		Dup			Dup				
FIELD MEASUREMENTS									
Time Sampled	15:40	9:10		9:10	9:35		14:15	11:55	10:30
Measuring Point Elev. (ft)									
Depth to Water (ft)	67.41	.	.	71.73	.	.	67.46	.	71.16
Groundwater Elevation (ft)									
Conductivity ($\mu\text{mho}/\text{cm}$)	414	700		409	406		352	353	309
Dissolved Oxygen (ppm)	8.28	6.34		1.37	4.96		8.1	4.94	0.79
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	-72	176	.	-64	-49	.	-39	-11	32
Temperature (degrees C)	14.1	19.6	.	17.2	17.7	.	14.2	18.1	18.3
Turbidity (NTU)	.	9	.	.	14	.	.	6	.
pH	6.75	7.54	.	6.8	7.59	.	6.93	6.94	6.61
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	405	.	.	413	.	.	299	.	295
Dissolved Solids (mg/L)	216	244	248	229	154	248	162	196	175
Suspended Solids (mg/L)	2	<	<	<	<	5.4	2	<	<
Turbidity (NTU)	7.56	.	.	8.29	.	.	2.42	.	1.07
pH	7.07	.	.	7.98	.	.	7.89	.	7.84
MAJOR IONS (mg/L)									
Calcium	51.2	49.3	48.6	49.6	50.2	51.2	39.4	40.2	40.6
Magnesium	21.1	22.1	22.1	21	22	22.2	16.2	15.2	15.2
Potassium	2.25	2.5	2.35	2.2	2.48	2.43	<	1.45	<
Sodium	2.97	3.08	3	2.99	3.03	3.14	6.46	0.84	0.691
Alkalinity as CO_3	<	<	<	<	8 Q	16 Q	<	<	<
Alkalinity as HCO_3	204	190	196	204	200	184	147	140	145
Chloride	4.11	14.4	3.8	4	3.5	3.9	2.59	2.2	2.44
Fluoride	1.23	1.5	1.5	1.18	1.3	1.3	0.179	0.17	0.163
Nitrate as N	<	<	<	<	<	<	0.077	0.065	0.0628
Sulfate	<	0.72	0.26	0.449	<	0.46	8.89	11.7	9.1
Charge balance	2.5	2.0	3.8	1.5	2.1	.	5.4	3.3	2.1
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Antimony (PMS)	<	.	.	.	.	.	.	.	.
Arsenic (PMS)	<	.	.	<	.	.	<	.	<
Arsenic	.	<	<	.	<	<	.	<	.
Barium	0.202	0.185	0.183	0.195	0.181	0.18	0.0482	0.0481	0.0472
Beryllium	.	<	<	.	<	<	.	<	.
Boron	<	0.0399	0.0355	<	0.0378	0.0368	<	0.0127	<
Cadmium (PMS)	<	.	.	<	.	.	<	.	<
Cadmium	.	<	<	.	<	<	.	<	.
Chromium (PMS)	<	.	.	<	.	.	<	.	<
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	1.35	0.663	0.251	0.987	0.515	0.289	0.143	0.0255	<
Lead (PMS)	<	.	.	<	.	.	<	.	0.000734
Lead	.	<	<	.	<	<	.	<	.
Lithium	<	<	<	<	<	<	<	<	<
Manganese	0.11	0.126	0.104	0.111	0.108	0.0997	0.00758	0.0051	<
Mercury (CVAAs)	<	.	.	<	.	.	<	.	<
Nickel (PMS)	<	.	.	<	.	.	<	.	<
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	<	.	.	<	.	.	<	.	<
Selenium	.	<	<	<	<	<	.	<	.
Strontium	1.53	1.54	1.5	1.54	1.48	1.46	0.273	0.0775	0.0686
Thallium (PMS)	<	.	.	<	.	.	<	.	<
Thallium	.	<	<	.	<	<	.	<	.
Uranium (PMS)	<	.	.	<	.	.	0.000601	.	0.000603
Uranium (KPA)	.	<	<	.	<	<	.	<	.
Zinc	0.0852	<	0.0104	0.102	<	0.0104	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-722-30	GW-722-32					GW-722-33				
Location	EXP-J	EXP-J					EXP-J				
Date Sampled	10/31/01	02/21/01	05/02/01	08/01/01	10/31/01	02/21/01	05/02/01	08/01/01	11/01/01		
Program	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP		
Sample Type											
FIELD MEASUREMENTS											
Time Sampled	8:30	10:25	11:45	10:00	13:25	11:20	12:40	10:45	8:40		
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	68.42	.	71.73	.	68.42	.	71.73	.		
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	464	435	281	483	514	431	321	485	1061		
Dissolved Oxygen (ppm)	7.02	4.8	10.19	4.93	6.41	7.92	9.84	5.82	4.98		
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	247	227	87	80	140	94	100	204	253		
Temperature (degrees C)	15.7	13.1	18.7	17.9	22.1	11.9	18.2	19.3	15.8		
Turbidity (NTU)	17	.	0	.	23	.	21	.	9		
pH	8.8	6.48	6.14	6.75	6.91	6.63	6.13	6.72	4.66		
MISCELLANEOUS ANALYTES											
Conductivity ($\mu\text{mho}/\text{cm}$)	.	446	.	493	.	444	.	502	.		
Dissolved Solids (mg/L)	188	251	271	292	324	245	293	295	350		
Suspended Solids (mg/L)	<	2	<	<	<	2	<	<	5.4		
Turbidity (NTU)	.	3.37	.	2.46	.	0.847	.	0.592	.		
pH	.	7.33	.	7.7	.	7.31	.	7.5	.		
MAJOR IONS (mg/L)											
Calcium	39.6	72.4	78.8	82.3	84	73.5	82.7	80.8	81.2		
Magnesium	15	10.8	13.7	13.4	15.9	11	15.8	13.6	16.4		
Potassium	1.44	<	2.6	<	2.61	<	3.68	2.11	3.66		
Sodium	1.08	3.02	3.57	3.31	3.84	3.06	3.98	3.32	3.96		
Alkalinity as CO ₃	8 Q	<	<	<	<	<	<	<	16 Q		
Alkalinity as HCO ₃	156	212	230	240	252	202	246	244	228		
Chloride	8	4.29	3.8	3.98	4.3	4.2	3.9	4.03	4.4		
Fluoride	0.18	<	<	<	<	<	<	<	<		
Nitrate as N	0.096	0.593	0.86	0.75	1	0.645	0.85	0.745	0.98		
Sulfate	11	11.4	13.8	12	14.6	11.6	14	12.1	15.2		
Charge balance	-6.5	0.0	2.2	1.3	1.8	2.9	2.9	0.5	2.7		
TRACE METALS (mg/L)											
Aluminum	<	<	<	<	<	<	<	<	<		
Antimony (PMS)	.	<	.	<	.	<	.	<	.		
Arsenic (PMS)	.	<	.	<	.	<	.	<	.		
Arsenic	<	.	<	.	<	.	<	.	<		
Barium	0.048	0.0347	0.0397	0.038	0.0628	0.0312	0.0461	0.0358	0.0438		
Beryllium	<	.	<	.	<	.	<	.	<		
Boron	<	<	<	<	<	<	<	<	<		
Cadmium (PMS)	.	<	.	<	.	<	.	<	.		
Cadmium	<	.	.	<	.	<	.	<	.		
Chromium (PMS)	.	<	.	<	.	<	0.0032	.	.		
Chromium	<	<	<	<	<	<	<	<	0.0051		
Cobalt	<	<	<	<	<	<	<	<	<		
Copper	<	<	<	<	<	0.009	<	<	<		
Iron	0.0371	0.325	0.0587	0.188	0.201	0.0835	0.0312	.	0.0414		
Lead (PMS)	.	0.000645	.	<	.	<	.	.	.		
Lead	<	.	<	.	<	.	<	.	<		
Lithium	<	<	<	<	<	<	<	<	<		
Manganese	<	0.00876	<	0.00553	0.0097	<	<	<	<		
Mercury (CVAA)	.	<	.	<	.	<	.	<	.		
Nickel (PMS)	.	<	.	<	.	<	.	<	.		
Nickel	<	<	<	<	<	<	<	<	<		
Selenium (PMS)	.	<	.	<	.	<	.	<	.		
Selenium	<	.	<	<	.	<	.	<	0.136		
Strontium	0.0818	0.0806	0.0816	0.0789	0.132	0.0702	0.0781	0.077	0.0765		
Thallium (PMS)	.	<	.	<	.	<	.	<	.		
Thallium	<	.	<	.	<	.	<	.	<		
Uranium (PMS)	.	<	.	<	.	<	.	<	.		
Uranium (KPA)	<	.	<	<	0.112	0.0442	<	<	<		
Zinc	<	<	<	<	.	<	<	<	<		

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-733		GW-735			GW-744		GW-747	
Location	EXP-J		EXP-J			GRIDK1		GRIDK2	
Date Sampled	01/08/01	07/11/01	05/08/01	11/01/01		05/07/01	10/31/01	05/07/01	10/31/01
Program	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type				Dup					
FIELD MEASUREMENTS									
Time Sampled	14:20	15:00	10:10	9:40	9:40	9:55	9:55	13:25	11:00
Measuring Point Elev. (ft)	959.84	959.84	924.46	924.46	924.46	907.62	907.62	921.13	921.13
Depth to Water (ft)	60.12	59.55	23.98	24.31	24.31	6.78	7.47	6.23	7.08
Groundwater Elevation (ft)	899.72	900.29	900.48	900.15	900.15	900.84	900.15	914.90	914.05
Conductivity ($\mu\text{mho}/\text{cm}$)	330	387	850	781	781	545	490	508	439
Dissolved Oxygen (ppm)	7.84	1.3	0.53	0.18	0.18	0.39	0.1	1.48	0.61
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	147	140	191	115	115	-205	-273	99	-70
Temperature (degrees C)	8.2	20.3	14.4	14.3	14.3	16	17	15.1	18
Turbidity (NTU)	35	10	.	.	.	.	.	.	.
pH	8.13	7.96	6.11	7.02	7.02	7.7	7.78	6.75	7.59
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	737	738	738	436	452	411	426
Dissolved Solids (mg/L)	210	207	437	434	423	274	260	251	234
Suspended Solids (mg/L)	<	<	<	<	<	<	<	<	<
Turbidity (NTU)	.	.	1.3	0.867	0.872	0.376	0.492	0.302	0.358
pH	.	.	7.06	7.08	7	7.88	7.88	7.71	7.75
MAJOR IONS (mg/L)									
Calcium	40.7	43.6	146	137	139	45	45.1	45.3	46.8
Magnesium	17	17.3	10.6	10.3	10.4	12	11.5	10.8	11
Potassium	1.94	1.87	2.4	2.31	2.34	3.39	3.52	2.29	2.27
Sodium	2.65	2.52	8.69	7.18	7.28	36.6	38	31.2	30.5
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	144	172	318	342	354	212	216	204	208
Chloride	9.4	9.3	17.8	17.5	17.3	8.39	7.92	1.99	2.09
Fluoride	0.31	0.19	.	<	<	<	0.107	0.181	0.19
Nitrate as N	0.72	0.47	0.497	0.361	0.363	<	<	<	<
Sulfate	9	8.4	31.7	28.8	29.9	12.7	11.9	15.8	16
Charge balance	2.8	-2.1	6.5	0.6	-0.3	1.8	1.5	1.0	0.7
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Antimony (PMS)	.	.	.	<	<	0.00424	<	<	<
Arsenic (PMS)	.	.	.	<	<	<	<	<	<
Arsenic	<	<	.	.	.	.	.	.	.
Barium	0.0244	0.023	0.318	0.324	0.327	0.298	0.293	0.16	0.163
Beryllium	<	<	.	.	.	.	.	.	.
Boron	0.0106	0.0111	.	<	<	<	<	<	<
Cadmium (PMS)	.	.	.	<	<	<	<	<	<
Cadmium	<	<	.	.	.	.	.	.	.
Chromium (PMS)	.	.	.	<	<	<	<	<	<
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.121	0.029	0.0726	0.0555	<	0.345	0.113	<	<
Lead (PMS)	.	.	0.0024	<	<	0.0014	<	<	<
Lead	<	<	.	.	.	.	.	.	.
Lithium	<	<	.	<	<	0.0275	0.0283	0.0168	0.0164
Manganese	<	<	0.0145	0.0204	0.0212	0.0278	0.0224	0.0166	0.0132
Mercury (CVAAs)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	<	<	<	<	<	<
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	.	.	.	<	<	<	<	<	<
Selenium	<	<	.	.	.	.	.	.	.
Strontium	0.097	0.0972	0.292	0.295	0.298	1.34	1.33	0.627	0.645
Thallium (PMS)	.	.	0.000528	<	<	<	<	<	<
Thallium	<	<	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	<	<	<	<	<	<
Uranium (KPA)	<	<	.	.	.	.	.	.	.
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-750		GW-762				GW-763		
Location	EXP-J		GRIDJ3				GRIDJ3		
Date Sampled	05/03/01	11/01/01	01/16/01		07/30/01		04/25/01		10/22/01
Program	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP
Sample Type			Dup		Dup		Dup		Dup
FIELD MEASUREMENTS									
Time Sampled	13:30	8:45	13:00	.	10:05	.	10:10	10:10	9:40
Measuring Point Elev. (ft)	919.03	919.03	915.34	.	915.34	.	915.05	915.05	915.05
Depth to Water (ft)	14.24	14.32	14.27	.	13.21	.	9.78	9.78	10.19
Groundwater Elevation (ft)	904.79	904.71	901.07	.	902.13	.	905.27	905.27	904.86
Conductivity ($\mu\text{mho}/\text{cm}$)	609	538	620	.	620	.	942	942	883
Dissolved Oxygen (ppm)	0.2	0.19	6.38	.	3.46	.	0.38	0.38	0.06
Iron ++ (mg/L)	.	.	0.19	.	0.01	.	.	.	.
Manganese ++ (mg/L)	.	.	0.4	.	0.48	.	.	.	.
Oxidation/Reduction (mV)	-22	-13	122	.	153	.	-103	-103	-206
Temperature (degrees C)	15.4	14.6	15.8	.	21.5	.	16.7	16.7	22
Turbidity (NTU)	.	.	6	.	27	.	.	.	.
pH	6.83	7.16	7.24	.	7.05	.	6.7	6.7	6.88
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	505	491	.		.		747	750	756
Dissolved Solids (mg/L)	293	296	390	388	379	410	402	398	405
Suspended Solids (mg/L)	<	<	<	7	<	<	47	41	31
Turbidity (NTU)	1.75	1.15	.	.	.	.	296	304	264
pH	7.45	7.33	.	.	.	.	6.77	6.79	6.74
MAJOR IONS (mg/L)									
Calcium	84.4	80.4	85.5	74.1	82	82.4	108	109	104
Magnesium	13.3	12.6	25	21.6	24.4	24.5	15.2	15.5	15.2
Potassium	5.45	5.36	4.28	3.63	3.95	3.97	<	<	<
Sodium	6.73	7.37	10	8.63	10.1	10.1	16	16.4	17.6
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	246	240	248	258	274	276	254	258	274
Chloride	5.25	4.88	43.2	42.1	39.5	40	79.4	77.9	79.2
Fluoride	<	<	<	<	<	<	0.225	0.226	0.265
Nitrate as N	<	<	0.054	0.056	0.028	0.032	<	<	<
Sulfate	14.5	14.8	15.9	15.8	15.3	15.1	2.03	2.02	0.516
Charge balance	3.3	2.5	2.7	-5.8	-2.0	-2.1	-0.2	0.1	-3.5
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Antimony (PMS)	<	<	.	.	.	.	<	<	<
Arsenic (PMS)	<	<	.	.	.	.	<	<	<
Arsenic	.	.	<	<	<	<	.	.	.
Barium	0.797	0.763	0.536	0.462	0.528	0.531	0.0512	0.0521	0.0517
Beryllium	.	.	<	<	<	<	.	.	.
Boron	0.115	0.109	0.0756	0.0652	0.0753	0.0759	<	<	<
Cadmium (PMS)	<	<	.	.	.	.	<	<	<
Cadmium	.	.	<	<	<	<	.	.	.
Chromium (PMS)	<	<	.	.	.	.	<	<	<
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.187	0.127	0.0557	0.0447	0.0216	0.022	28.9	29.6	25.1
Lead (PMS)	<	<	.	.	.	.	<	<	<
Lead	.	.	<	<	<	<	.	.	.
Lithium	0.0106	0.0112	0.0176	0.0149	0.0159	0.0158	<	<	<
Manganese	0.0547	0.0486	0.0574	0.0492	0.0584	0.0589	1.08	1.09	0.736
Mercury (CVAA)	<	<	.	.	.	.	<	<	<
Nickel (PMS)	<	<	.	.	.	.	<	<	<
Nickel	<	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	.	.	.	.	<	<	<
Selenium	.	.	<	<	<	<	.	.	.
Strontium	0.844	0.789	0.746	0.644	0.737	0.741	0.208	0.212	0.219
Thallium (PMS)	<	<	.	.	.	.	<	<	<
Thallium	.	.	<	<	<	<	.	.	.
Uranium (PMS)	<	<	.	.	.	.	<	<	<
Uranium (KPA)	.	.	<	<	<	<	.	.	.
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-769		GW-770		GW-771		GW-772		
Location	GRIDG3		GRIDG3		GRIDC1		GRIDC1		
Date Sampled	04/17/01	10/16/01	04/17/01	10/15/01	05/22/01	11/05/01	05/22/01		11/06/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type							Dup		
FIELD MEASUREMENTS									
Time Sampled	13:20	8:45	9:55	13:50	10:00	11:05	13:20	13:20	10:30
Measuring Point Elev. (ft)	944.44	944.44	944.71	944.71	1011.20	1011.20	1012.66	1012.66	1012.66
Depth to Water (ft)	8.32	10.57	11.18	13.54	10.58	12.39	11.67	11.67	14.10
Groundwater Elevation (ft)	936.12	933.87	933.53	931.17	1000.62	998.81	1000.99	1000.99	998.56
Conductivity ($\mu\text{mho}/\text{cm}$)	574	556	465	440	513	460	394	394	349
Dissolved Oxygen (ppm)	0.24	0.06	4.81	2.83	1.47	0.38	1.25	1.25	0.17
Iron ++ (mg/L)	.	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	113	10	174	104	189	76	39	39	-5
Temperature (degrees C)	16.4	18.2	14.4	21.5	17.8	19.2	16.5	16.5	20.2
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	7.45	7.08	7.12	6.8	7.04	7.55	6.02	6.02	5.96
MISCELLANEOUS ANALYTES									
Conductivity ($\mu\text{mho}/\text{cm}$)	470	481	380	390	441	439	337	348	333
Dissolved Solids (mg/L)	279	287	214	234	274	263	174	161	165
Suspended Solids (mg/L)	<	<	<	<	<	<	2	<	<
Turbidity (NTU)	1.66	1.47	1.25	8.5	0.356	0.333	155	75.2	4.58
pH	7.45	7.47	7.36	7.15	7.67	7.35	6.34	6.34	6.36
MAJOR IONS (mg/L)									
Calcium	80.2	78.1	61.7	64.6	77.8	75.2	12.1	11.9	12.5
Magnesium	8.7	9.53	5.02	5.03	8.2	7.87	7.64	7.53	9.14
Potassium	2.52	2.78	2.15	2.5	<	<	<	<	<
Sodium	8.68	7.41	8.45	9.2	6.16	6.11	18.4	18.4	21.3
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	210	212	138	151	198	206	103	106	101
Chloride	14.5	14.5	15.6	15	7.17	7.58	34.3	33.8	34.6
Fluoride	<	<	0.209	0.233	<	0.105	0.1	0.1	0.116
Nitrate as N	0.655	0.0856	0.666	0.826	<	<	0.042	0.0365	<
Sulfate	29.3	19.3	29.7	28.7	21.2	18.3	6.59	6.46	11.4
Charge balance	-1.0	0.2	0.5	-0.1	2.4	-0.6	-21.9 R	-22.9 R	-16.9
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Antimony (PMS)	<	<	<	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	<	<	<	<	<
Arsenic	.	.	.	.	.	.	.	.	.
Barium	0.365	0.379	0.0644	0.069	0.147	0.146	0.0523	0.054	0.048
Beryllium	.	.	.	.	.	.	.	.	.
Boron	<	<	<	<	<	<	<	<	<
Cadmium (PMS)	<	<	<	<	<	<	<	<	<
Cadmium	.	.	.	.	.	.	.	.	.
Chromium (PMS)	<	<	0.0225	0.0234	<	<	<	<	<
Chromium	<	<	0.0202 J	0.0233 J	<	<	<	<	<
Cobalt	<	<	<	<	<	<	0.0294	0.0306	<
Copper	<	<	<	<	<	<	<	<	<
Iron	<	0.0593	0.131	0.275	<	<	29.5	32.3	15.5
Lead (PMS)	<	<	<	<	0.000814	<	0.00378	0.00359	<
Lead	.	.	.	.	.	.	.	.	.
Lithium	0.0128	0.0147	<	<	0.0104	0.0103	<	<	<
Manganese	<	0.0109	<	<	0.217	0.216	8.28	8.88	6.12
Mercury (CVAA)	<	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	0.113	0.0498	<	<	0.00656	0.00559	<
Nickel	<	<	0.101 J	<	<	<	<	<	<
Selenium (PMS)	<	<	<	<	<	<	<	<	<
Selenium	.	.	.	.	.	.	.	.	.
Strontium	0.345	0.38	0.0847	0.0846	0.188	0.186	0.0418	0.042	0.0423
Thallium (PMS)	<	<	<	<	<	<	0.000579	0.000574	<
Thallium	.	.	.	.	.	.	.	.	.
Uranium (PMS)	<	<	0.000991	0.000531	<	<	<	<	<
Uranium (KPA)	.	.	.	.	.	.	.	.	.
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-782				GW-784		GW-785	
Location	GRIDE3				GRIDD1		GRIDD1	
Date Sampled	04/18/01		09/05/01	10/16/01	05/21/01	11/07/01	05/21/01	11/07/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type	Dup							
FIELD MEASUREMENTS								
Time Sampled	10:15	10:15	8:55	9:55	10:15	9:55	13:35	11:50
Measuring Point Elev. (ft)	947.76	947.76	947.76	947.76	1009.27	1009.27	1009.43	1009.43
Depth to Water (ft)	9.24	9.24	8.96	9.50	13.31	14.05	13.13	13.85
Groundwater Elevation (ft)	938.52	938.52	938.80	938.26	995.96	995.22	996.30	995.58
Conductivity ($\mu\text{mho}/\text{cm}$)	637	637	558	581	695	664	246	230
Dissolved Oxygen (ppm)	0.23	0.23	0.03	0.15	1.71	0.37	0.61	0.13
Iron ++ (mg/L)	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	147	147	33	-7	215	88	-16	-33
Temperature (degrees C)	15.4	15.4	17.8	17.5	19	15.7	18	18.2
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	7.12	7.12	7.08	7.12	6.74	6.86	5.65	5.79
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)	534	544	501	513	613	619	213	208
Dissolved Solids (mg/L)	304	309	301	316	355	351	101	102
Suspended Solids (mg/L)	1	1	<	<	<	<	<	<
Turbidity (NTU)	8.4	7.99	4.03	1.82	2.08	1.2	93.3	34.4
pH	7.56	7.56	7.45	7.44	7.46	7.26	6.09	6.29
MAJOR IONS (mg/L)								
Calcium	77.9	78.4	76.6	70.9	106	102	2.23	2.21
Magnesium	16.3	16.1	16.1	16.4	10.7	10.2	1.72	1.75
Potassium	5.06	4.99	5.21	5.3	<	2.15	<	<
Sodium	9.75	9.61	9.57	8.82	11.2	11.5	10.5	11
Alkalinity as CO_3	<	<	<	<	<	<	<	<
Alkalinity as HCO_3	240	248	258	240	236	254	59	61.8
Chloride	11.9	11.9	13.5	14.4	38	76.9	28.1	27.5
Fluoride	<	<	<	<	<	<	<	<
Nitrate as N	0.175	0.194	0.081	<	<	<	<	<
Sulfate	18.4	18.2	17.9	16.5	15.9	15.6	<	<
Charge balance	2.2	0.9	-1.9	-1.3	4.2	-7.7	-47 R	-46.5 R
TRACE METALS (mg/L)								
Aluminum	<	<	<	<	<	<	<	<
Antimony (PMS)	<	<	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	<	<	<	<
Arsenic	.	.	.	.	.	.	.	.
Barium	0.588	0.577	0.533	0.459	0.266	0.268	0.0296	0.0369
Beryllium	.	.	.	.	.	.	.	.
Boron	0.123	0.121	0.119	0.134	<	<	<	<
Cadmium (PMS)	<	<	<	<	<	<	<	<
Cadmium	.	.	.	.	.	.	.	.
Chromium (PMS)	0.00272	<	0.00395	<	<	<	<	<
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	0.96	0.721	0.772	0.279	0.257	0.119	35.7	33.4
Lead (PMS)	<	<	<	<	0.00387	<	0.00312	<
Lead	.	.	.	.	.	.	.	.
Lithium	0.0196	0.0192	0.0203	0.0204	0.019	0.0176	<	<
Manganese	0.0319	0.0237	0.0312	0.0304	0.502	0.563	1.72	1.62
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	<	<	0.0155	0.00603	<	<
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	<	<	0.0108	<	<	<
Selenium	.	.	.	.	.	.	.	.
Strontium	1.1	1.08	1.1	1.15	0.32	0.316	0.0132	0.0136
Thallium (PMS)	<	<	<	<	0.000545	<	0.000596	<
Thallium	.	.	.	.	.	.	.	.
Uranium (PMS)	0.00204	0.00176	0.00127	0.00109	<	<	<	<
Uranium (KPA)	.	.	.	.	.	.	.	.
Zinc	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-789		GW-791			GW-816		
Location	GRIDF3		GRIDD2			EXP-SR		
Date Sampled	04/16/01	10/15/01	04/19/01	10/17/01		05/03/01		10/31/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type				Dup		Dup		Dup
FIELD MEASUREMENTS								
Time Sampled	13:55	10:20	10:45	10:00	10:00	9:05	9:05	8:30
Measuring Point Elev. (ft)	937.48	937.48	992.16	992.16	992.16	898.41	898.41	898.41
Depth to Water (ft)	3.42	3.84	23.19	23.89	23.89	13.89	13.89	14.45
Groundwater Elevation (ft)	934.06	933.64	968.97	968.27	968.27	884.52	884.52	883.96
Conductivity ($\mu\text{mho}/\text{cm}$)	546	483	522	497	497	579	579	580
Dissolved Oxygen (ppm)	0.96	0.36	0.39	1.05	1.05	1.79	1.79	2.75
Iron ++ (mg/L)	.	.	.	.	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	170	183	2	18	18	-17	-17	7
Temperature (degrees C)	18.3	19.7	18.3	18.4	18.4	15.4	15.4	13.2
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	7.45	7.32	7.41	7.24	7.24	6.26	6.26	6.73
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)	428	425	450	444	443	456	459	536
Dissolved Solids (mg/L)	238	258	268	279	274	247	246	266
Suspended Solids (mg/L)	<	<	<	<	<	106	112	22
Turbidity (NTU)	1.07	0.373	0.512	0.405	0.397	318	301	35.8
pH	7.64	7.58	7.59	7.33	7.34	6.76	6.74	6.8
MAJOR IONS (mg/L)								
Calcium	65.3	67.1	65.7	67.8	66.2	67	67.9	76.1
Magnesium	11.9	12.4	14.9	14.9	14.6	17.2	17.3	19.3
Potassium	3.06	3.18	2.1	<	2.04	4.76	4.88	6.23
Sodium	6.12	6.17	7.47	7.43	7.3	5.06	5.06	7.42
Alkalinity as CO_3	<	<	<	<	<	<	<	<
Alkalinity as HCO_3	179	185	216	230	232	202	208	252
Chloride	10.7	11.2	6.66	7.34	7.36	13.6	13.3	12.6
Fluoride	<	<	<	<	<	<	<	<
Nitrate as N	0.989	0.518	<	<	<	<	<	0.148
Sulfate	20.3	22.7	11	11.6	11.6	11.7	12.1	4.54
Charge balance	2.3	2.1	1.6	-1.1	-2.1	4.5	3.8	3.3
TRACE METALS (mg/L)								
Aluminum	<	<	<	<	<	0.397	0.588	<
Antimony (PMS)	<	<	<	<	<	<	<	<
Arsenic (PMS)	<	<	<	<	<	0.0226	0.0262	<
Arsenic	.	.	.	.	.	.	.	.
Barium	0.379	0.395	0.267	0.263	0.259	0.318	0.341	0.35
Beryllium	.	.	.	.	.	.	.	.
Boron	<	<	<	<	<	<	<	<
Cadmium (PMS)	<	<	<	<	<	<	<	<
Cadmium	.	.	.	.	.	.	.	.
Chromium (PMS)	<	<	<	<	<	<	<	<
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	0.021	0.0242	<
Copper	<	<	<	<	<	<	<	<
Iron	<	<	0.298	0.0702	0.0699	91.9	117	12.4
Lead (PMS)	<	<	<	0.000534	<	0.00283	0.00423	<
Lead	.	.	.	.	.	.	.	.
Lithium	0.0127	0.0133	0.014	0.0139	0.0135	<	<	<
Manganese	<	0.0121	0.0146	0.0176	0.0175	1.86	1.95	0.954
Mercury (CVAA)	<	<	<	<	<	<	<	<
Nickel (PMS)	<	<	<	<	<	0.00641	0.00804	<
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	<	<	<	<	<	<
Selenium	.	.	.	.	.	.	.	.
Strontium	0.34	0.354	0.437	0.425	0.418	0.106	0.107	0.125
Thallium (PMS)	<	<	<	<	<	<	<	<
Thallium	.	.	.	.	.	.	.	.
Uranium (PMS)	<	<	<	<	<	0.00124	0.00142	<
Uranium (KPA)	.	.	.	.	.	.	.	.
Zinc	<	<	<	<	<	<	<	<

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	GW-832		LRSPW		NPR07.0SW			NPR12.0SW		
Location	NHP		EXP-SW		EXP-NPR			EXP-NPR		
Date Sampled	01/11/01	07/30/01	05/02/01	10/30/01	05/09/01		11/27/01	05/09/01	11/27/01	
Program	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	
Sample Type					Dup					
FIELD MEASUREMENTS										
Time Sampled	11:31	13:06	9:15	10:30	11:20	11:20	10:00	11:00	9:20	
Measuring Point Elev. (ft)	906.18	906.18	.	.	.	.	.	.	.
Depth to Water (ft)	7.15	6.90	.	.	.	.	.	.	.
Groundwater Elevation (ft)	899.03	899.28	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	348	445	486	396	229	229	260	180	229	
Dissolved Oxygen (ppm)	6.35	3.11	2.95	3.38	5.03	5.03	5.25	5.07	5.42	
Iron ++ (mg/L)	0.02	0	.	.	.	.	.	.	.
Manganese ++ (mg/L)	0.5	0.4	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	132	159	232	196	218	218	57	221	126	
Temperature (degrees C)	9.6	22.3	17.3	15.1	15.6	15.6	12.3	14.8	12.8	
Turbidity (NTU)	9	22	.	.	.	.	.	.	.
pH	7.89	7.24	6.81	7.59	6.81	6.81	7.58	6.88	7.55	
MISCELLANEOUS ANALYTES										
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	380	349	187.2	188	241	151.2	203	
Dissolved Solids (mg/L)	234	257	229	210	121	124	135	102	121	
Suspended Solids (mg/L)	<	5.8	<	<	< 1 R	13 R	7	171	20	
Turbidity (NTU)	.	.	2.09	1.36	1.07	4.91	5.19	48.4	7	
pH	.	.	7.47	7.78	7.41	7.99	7.66	7.67	7.57	
MAJOR IONS (mg/L)										
Calcium	39.8	59.6	51.1	42.1	16.4	16.7	20.1	14.6	18.1	
Magnesium	11	12.1	13	11.6	10.1	10.3	12.3	8.05	9.78	
Potassium	2.05	3	2.14	<	3.92	3.7	3.85	4.35	3.51	
Sodium	11.2	9.82	10.8	9.68	4.26	4.39	5.38	4	5.6	
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<	
Alkalinity as HCO ₃	106	172	138	128	81	77.2	104	60.8	90	
Chloride	15.2	15.3	12.9	11.9	1.03	1.04	1.33	0.996	0.981	
Fluoride	0.34	0.15	0.171	0.339	<	<	<	<	<	
Nitrate as N	1.5	2	1.37	1.21	<	<	<	<	<	
Sulfate	31.9	25.2	29.3	30.6	10.3	10.5	13.5	8.67	9.82	
Charge balance	1.4	-0.8	3.8	-2.2	1.9	4.7	-1.1	8.1	0.2	
TRACE METALS (mg/L)										
Aluminum	0.0582	0.0817	<	<	1.36	<	0.628	3.4	0.376	
Antimony (PMS)	.	.	<	<	<	<	<	<	<	
Arsenic (PMS)	.	.	<	<	<	<	<	<	<	
Arsenic	<	<	.	.	.	.	.	.	.
Barium	0.036	0.068	0.0466	0.041	0.108	0.0842	0.0936	0.139	0.0843	
Beryllium	<	<	.	.	.	.	.	.	.
Boron	0.0272	0.0287	<	<	<	<	<	<	<	
Cadmium (PMS)	.	.	<	<	<	<	<	<	<	
Cadmium	<	<	.	.	.	.	.	.	.
Chromium (PMS)	.	.	<	<	<	<	<	0.00391	<	
Chromium	<	<	<	<	<	<	<	<	<	
Cobalt	<	<	<	<	<	<	<	<	<	
Copper	<	<	<	<	<	<	<	<	<	
Iron	0.0844	0.153	0.062	<	1.57 R	0.125 R	0.819	4.7	0.829	
Lead (PMS)	.	.	0.00164	<	0.00154	<	0.000659	0.00443	<	
Lead	<	<	.	.	.	.	.	.	.
Lithium	0.0182	0.0132	0.0156	<	<	<	<	0.0114	<	
Manganese	0.0103	0.0219	0.00643	<	0.255	0.0338	0.149	0.475	0.124	
Mercury (CVAAs)	.	.	<	<	<	<	<	<	<	
Nickel (PMS)	.	.	<	<	<	<	<	0.00952	<	
Nickel	<	<	<	<	<	<	<	<	<	
Selenium (PMS)	.	.	<	<	<	<	<	<	<	
Selenium	<	<	.	.	.	.	.	.	.
Strontium	0.105	0.146	0.122	0.125	0.0941	0.0948	0.121	0.0731	0.0922	
Thallium (PMS)	.	.	<	<	<	<	<	<	<	
Thallium	<	<	.	.	.	.	.	.	.
Uranium (PMS)	.	.	0.00533	0.00442	<	<	<	0.000572	<	
Uranium (KPA)	0.00515	0.0166	.	.	.	.	.	.	.
Zinc	0.0115	0.0116	<	<	<	<	<	<	<	

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	NPR23.0SW		OF 51		OF 200			
Location	EXP-NPR		EXP-SW		EXP-SW			
Date Sampled	05/09/01	11/27/01	02/27/01	08/28/01	02/14/01	02/27/01	08/28/01	09/04/01
Program	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	10:45	9:00	10:18	13:06	14:56	9:49	12:42	13:03
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	249	256	189	195	367	257	205	205
Dissolved Oxygen (ppm)	5.29	4.5	11.46	8.7	6.85	11.35	8.5	7.99
Iron ++ (mg/L)	.	.	.	.	.	.	.	.
Manganese +++ (mg/L)	.	.	.	.	.	.	.	.
Oxidation/Reduction (mV)	232	218	190	55	111	155	130	10
Temperature (degrees C)	14.7	12.7	14.2	17	14.5	15.6	22.2	23.5
Turbidity (NTU)	.	.	57	44	5	49	33	39
pH	6.87	7.45	8.56	7.82	7.76	8.95	7.7	7.86
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)	192	235	.	.	.	.	.	.
Dissolved Solids (mg/L)	113	138	300	251	197	267	302	248
Suspended Solids (mg/L)	<	<	5.5	<	5.5	5.1	<	<
Turbidity (NTU)	1.95	2.92	.	.	.	.	.	.
pH	7.85	7.71	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	18.2	23.5	51.4	55.3	47.8	51.7	48.2	59.3
Magnesium	7.98	8.8	24.2	18.9	9.03	11.5	12.9	12.9
Potassium	2.78	2.47	1.49	1.94	2.66	2.76	3.21	3.48
Sodium	2.93	3.64	4.67	8.58	10.1	9.5	12.9	11.7
Alkalinity as CO_3	<	<	<	<	<	<	<	<
Alkalinity as HCO_3	69	98.6	199	174	94	125	122	122
Chloride	0.85	0.812	6.2	11.2	17.1	13.3	27.4	16.2
Fluoride	<	<	<	0.2	0.31	0.27	0.64	0.63
Nitrate as N	<	<	5	5.5	7	5.8	3.1	6.4
Sulfate	11.8	13.9	13.5	27.2	28.2	30.9	34.9	41.6
Charge balance	3.4	-3.7	0.0	-0.3	2.4	0.7	-1.0	4.1
TRACE METALS (mg/L)								
Aluminum	<	<	<	<	0.285	<	0.144	0.0536
Antimony (PMS)	<	<	.	.	.	.	.	.
Arsenic (PMS)	<	<	.	<	<	<	<	<
Arsenic	.	.	.	<	.	.	.	.
Barium	0.058	0.0601	0.0782	0.0722	0.0536	0.0564	0.0468	0.0621
Beryllium	.	.	<	<	<	<	<	<
Boron	<	<	0.025	0.0377	0.311	0.496	0.608	0.777
Cadmium (PMS)	<	<	.	.	.	.	.	.
Cadmium	.	.	<	<	<	0.0011	<	<
Chromium (PMS)	<	<	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	0.0065	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	0.0242	0.0136	0.0063	<	0.0278	0.0052
Iron	0.188	0.14	0.0511	0.0396	0.414	0.135	0.326	0.0992
Lead (PMS)	<	<	.	.	.	.	.	.
Lead	.	.	<	<	0.0109	<	<	<
Lithium	<	<	<	0.0124	0.102	0.158	0.169	0.239
Manganese	0.0227	0.0107	0.0138	0.0078	0.0913	0.0815	0.0834	0.0516
Mercury (CVAA)	<	<	.	.	.	.	.	.
Nickel (PMS)	<	<	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<
Selenium (PMS)	<	<	.	.	.	.	.	.
Selenium	.	.	<	<	<	<	<	<
Strontium	0.0653	0.0739	0.0758	0.13	0.125	0.144	0.152	0.174
Thallium (PMS)	<	<	.	.	.	.	.	.
Thallium	.	.	<	<	<	<	<	<
Uranium (PMS)	<	<	.	.	.	.	.	.
Uranium (KPA)	.	.	0.00994	0.0116	0.142	0.134	0.00775	0.0824
Zinc	<	<	<	<	0.144	0.0308	0.0751	0.0337

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	SCR7.1SP		SCR7.8SP		STATION 17			
Location	EXP-UV		EXP-UV		EXP-SW			
Date Sampled	01/29/01	08/13/01	01/29/01	08/13/01	02/14/01	02/27/01	08/28/01	09/04/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	15:23	14:00	15:41	14:14	10:25	9:25	13:42	13:38
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	231000	252	202000	193	323	136	143	160
Dissolved Oxygen (ppm)	12.21	8.07	12.81	9.36	8.08	13.17	9.34	9.15
Iron ++ (mg/L)	0.05	0.04	0.02	0.01	.	.	.	.
Manganese ++ (mg/L)	0.3	0.35	0.1	0.11	.	.	.	.
Oxidation/Reduction (mV)	270	163	260	174	141	185	20	35
Temperature (degrees C)	11.6	18.3	12	19.3	11.3	13.2	21.1	21.4
Turbidity (NTU)	3	78	5	60	74	9	40	37
pH	8.27	8.06	8.15	8.38	8.05	7.09	8.3	8.13
MISCELLANEOUS ANALYTES								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	323	315	260	268	171	228	201	213
Suspended Solids (mg/L)	<	<	6.4	<	<	6.6	<	<
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	.	.	.	.	38	42.8	36.8	46.5
Magnesium	.	.	.	.	8.04	12.1	9.94	11.3
Potassium	.	.	.	.	2.45	2.21	2.04	2.59
Sodium	.	.	.	.	8.59	9.91	9.47	10.8
Alkalinity as CO ₃	<	<	<	<	<	<	12	<
Alkalinity as HCO ₃	218	232	192	224	96	118	100	120
Chloride	7.9	4	9.4	6.7	14.1	10.4	12.3	12.6
Fluoride	<	<	<	<	0.16	0.13	0.28	0.23
Nitrate as N	0.86	0.41	1.8	1.4	2.7	1.8	1.4	2.2
Sulfate	27.3	21	14.5	11.1	24.8	29.6	31.8	32.9
Charge balance	.	.	.	.	-0.7	3.1	-3.8	2.4
TRACE METALS (mg/L)								
Aluminum	.	.	.	.	0.432	0.111	0.108	0.122
Antimony (PMS)	.	.	.	.	.	.	.	.
Arsenic (PMS)	.	.	.	.	.	.	.	.
Arsenic	.	.	.	.	<	<	<	<
Barium	.	.	.	.	0.0448	0.0474	0.0366	0.0491
Beryllium	.	.	.	.	<	<	<	<
Boron	.	.	.	.	0.0238	0.0223	0.131	0.164
Cadmium (PMS)	.	.	.	.	.	.	.	.
Cadmium	.	.	.	.	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	.	.	.	.	<	<	<	<
Cobalt	.	.	.	.	<	<	<	<
Copper	.	.	.	.	<	<	<	<
Iron	.	.	.	.	0.599	0.175	0.189	0.175
Lead (PMS)	.	.	.	.	.	.	.	.
Lead	.	.	.	.	<	<	<	<
Lithium	.	.	.	.	0.0121	<	0.0354	0.0488
Manganese	.	.	.	.	0.0678	0.0412	0.0484	0.0451
Mercury (CVAA)	.	.	.	.	.	.	.	.
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	.	.	.	.	<	<	<	<
Selenium (PMS)	.	.	.	.	.	.	.	.
Selenium	.	.	.	.	<	<	<	<
Strontium	.	.	.	.	0.0967	0.121	0.114	0.138
Thallium (PMS)	.	.	.	.	<	<	<	<
Thallium	.	.	.	.	.	.	.	.
Uranium (PMS)	.	.	.	.	0.0379	0.0332	0.00453	0.0265
Uranium (KPA)	.	.	.	.	0.0545	0.0134	0.0179	0.0126
Zinc	.	.	.	.	.	.	.	.

APPENDIX E.1: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Sampling Point	STATION 8			
Location	EXP-SW			
Date Sampled	02/14/01	02/27/01	08/28/01	09/04/01
Program	WRRP	WRRP	WRRP	WRRP
Sample Type				
FIELD MEASUREMENTS				
Time Sampled	9:40	10:05	13:25	13:20
Measuring Point Elev. (ft)	.	.	.	.
Depth to Water (ft)	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	772	312	147	151
Dissolved Oxygen (ppm)	8.56	13.2	9.87	9.63
Iron ++ (mg/L)	.	.	.	.
Manganese ++ (mg/L)	.	.	.	.
Oxidation/Reduction (mV)	212	138	40	40
Temperature (degrees C)	11.8	11	20	19.2
Turbidity (NTU)	68	5	18	77
pH	7.34	7.9	7.87	8.02
MISCELLANEOUS ANALYTES				
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.
Dissolved Solids (mg/L)	179	226	194	213
Suspended Solids (mg/L)	<	5.1	<	<
Turbidity (NTU)	.	.	.	.
pH	.	.	.	.
MAJOR IONS (mg/L)				
Calcium	40	39.3	39.3	45.3
Magnesium	8.73	10.9	10.7	11.3
Potassium	2.38	2.21	2.28	2.53
Sodium	8.83	8.83	10.1	9.87
Alkalinity as CO_3	<	<	<	<
Alkalinity as HCO_3	100	111	110	116
Chloride	14.4	9.2	15.2	11.5
Fluoride	0.19	0.12	0.32	0.24
Nitrate as N	3.6	1.8	1.4	2.3
Sulfate	29.2	30.2	31.1	33
Charge balance	-1.9	0.9	-0.8	2.5
TRACE METALS (mg/L)				
Aluminum	0.301	0.13	0.131	0.148
Antimony (PMS)	.	.	.	.
Arsenic (PMS)	.	.	.	.
Arsenic	<	<	<	<
Barium	0.0395	0.0403	0.0383	0.0451
Beryllium	<	<	<	<
Boron	0.026	0.127	0.182	0.23
Cadmium (PMS)	.	.	.	.
Cadmium	<	<	<	<
Chromium (PMS)	.	.	.	.
Chromium	<	<	<	<
Cobalt	<	<	<	<
Copper	<	<	0.0109	<
Iron	0.409	0.199	0.24	0.199
Lead (PMS)	.	.	.	.
Lead	<	<	<	<
Lithium	0.0156	0.0388	0.0496	0.0684
Manganese	0.0601	0.0593	0.0874	0.0678
Mercury (CVAA)	.	.	.	.
Nickel (PMS)	.	.	.	.
Nickel	<	<	<	<
Selenium (PMS)	.	.	.	.
Selenium	<	<	<	<
Strontium	0.104	0.12	0.124	0.138
Thallium (PMS)	.	.	.	.
Thallium	<	<	<	<
Uranium (PMS)	.	.	.	.
Uranium (KPA)	0.0558	0.0367	<	0.026
Zinc	0.058	0.0126	0.0285	0.0147

APPENDIX E.2
VOLATILE ORGANIC COMPOUNDS

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GHK2.51ESW	GHK2.51WSW		GW-108		GW-151		GW-153		GW-154
Location	EXP-NPR	EXP-NPR		S3		NHP		NHP		NHP
Date Sampled	05/23/01	05/09/01	11/27/01	01/04/01	07/11/01	01/11/01	07/30/01	04/26/01	10/23/01	01/11/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	WRRP
Sample Type										
Chloroethenes ($\mu\text{g/L}$)										
Tetrachloroethene	<	<	<	1 J	1 J	200	290 J	4 J	4 J	<
Trichloroethene	<	<	<	3 J	3 J	60	75	<	2 J	<
cis-1,2-Dichloroethene	<	<	<	<	<	15	29	<	<	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	1 J	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	3 J	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)										
Carbon tetrachloride	<	<	<	<	<	1,700	1,600	200	170	<
Chloroform	<	<	<	36	31	68	75	13	10	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	23	13	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)										
Benzene	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)										
Acetone	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	7	<
Bromoform	<	<	<	4 J	3 J	<	<	22	<	<
Bromomethane	<	<	<	29	20	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	14	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<	<

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-154		GW-169		GW-170							
Location	NHP		EXP-UV		EXP-UV							
Date Sampled	07/30/01	05/01/01	07/31/01	01/10/01		05/01/01		07/31/01		11/07/01		
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type				Dup		Dup		Dup		Dup		Dup
Chloroethenes ($\mu\text{g/L}$)												
Tetrachloroethylene	<	1 J	1 J	2 J	2 J	2 J	2 J	2 J	2 J	2 J	2 J	2 J
Trichloroethylene	<	<	<	1 J	1 J	2 J	2 J	1 J	1 J	2 J	2 J	2 J
cis-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)												
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)												
Carbon tetrachloride	<	<	<	5	5	4 J	4 J	2 J	3 J	2 J	2 J	2 J
Chloroform	<	<	<	12	11	10	10	9	9	10	10	10
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)												
Benzene	<	<	<	3 J	3 J	4 J	4 J	3 J	3 J	4 J	4 J	5 J
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)												
Acetone	<	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-171		GW-172		GW-192		GW-193		GW-204		
Location	EXP-UV		EXP-UV		B4		T2331		T0134		
Date Sampled	01/29/01	08/01/01	01/29/01	08/01/01	04/24/01	10/17/01	01/08/01	07/12/01	05/23/01	09/05/01	11/12/01
Program	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP
Sample Type											
Chloroethenes ($\mu\text{g/L}$)											
Tetrachloroethylene	<	<	<	<	4 J	2 J	<	<	<	<	<
Trichloroethylene	<	<	<	<	6	3 J	<	<	<	<	<
cis-1,2-Dichloroethylene	<	<	<	<	25	12	<	<	<	<	<
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)											
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)											
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)											
Benzene	<	<	<	<	<	<	66	9	<	<	<
Dimethylbenzene	<	<	<	<	<	<	2 J	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	45	<	<	<	<
Toluene	<	<	<	<	<	<	4 J	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)											
Acetone	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-207		GW-208		GW-219			GW-220		GW-223	
Location	EXP-SR		EXP-SR		UOV			NHP		NHP	
Date Sampled	05/02/01	10/30/01	05/02/01	10/30/01	05/24/01	11/06/01		04/30/01	10/23/01	01/11/01	07/31/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP
Sample Type						Dup					
Chloroethenes ($\mu\text{g/L}$)											
Tetrachloroethylene	<	<	<	<	<	<	<	120	280	44	67
Trichloroethylene	<	<	<	<	2 J	<	<	35	55	18	17
cis-1,2-Dichloroethylene	<	<	<	<	<	<	<	11	22	86	60
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	6	2
Chloroethanes ($\mu\text{g/L}$)											
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)											
Carbon tetrachloride	<	<	<	<	<	<	<	1,000	1,200	<	<
Chloroform	<	<	<	<	<	<	<	55	76	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)											
Benzene	<	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)											
Acetone	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	2 J	.	.	.

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-230		GW-232				GW-240		GW-251	
Location	EXP-UV		EXP-UV				NHP		S2	
Date Sampled	01/29/01	08/01/01	01/10/01	05/01/01	07/31/01	11/07/01	04/26/01	10/22/01	04/24/01	10/18/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP
Sample Type										
Chloroethenes ($\mu\text{g/L}$)										
Tetrachloroethene	<	<	<	<	<	<	<	<	200	50
Trichloroethene	<	<	<	<	<	<	<	<	100	18
cis-1,2-Dichloroethene	22	17	<	<	<	<	<	<	8	<
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	7	5	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)										
Carbon tetrachloride	<	<	<	<	<	<	4 J	7	4 J	<
Chloroform	<	<	<	<	<	<	2 J	4 J	10	4 J
Methylene chloride	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)										
Benzene	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)										
Acetone	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	.	.	.	.	.	.	.	.	<	<

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-253		GW-381		GW-382		GW-383			GW-605	
Location	S2		NHP		NHP		NHP			EXP-I	
Date Sampled	05/02/01	10/29/01	05/01/01	10/24/01	01/22/01	07/31/01	04/30/01	10/24/01		01/05/01	
Program	WRRP	WRRP	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP	WRRP	WRRP
Sample Type								Dup		Dup	
Chloroethenes ($\mu\text{g/L}$)											
Tetrachloroethylene	680	810	4 J	2 J	12	12	390	640	610	21	20
Trichloroethylene	580	700	<	<	2 J	2 J	190	180	250	22	22
cis-1,2-Dichloroethylene	240	270	3 J	<	3 J	3 J	130	130	150	39	40
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	2 J	2 J	<	<
1,1-Dichloroethylene	2 J	<	<	<	<	<	<	3 J	4 J	<	<
Vinyl chloride	53	54	<	<	<	<	<	2 J	2	<	<
Chloroethanes ($\mu\text{g/L}$)											
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	1 J	1 J	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)											
Carbon tetrachloride	32	38	320	14	1,000	580	<	<	<	17	16
Chloroform	49	61	300	<	390	610	<	<	<	12	12
Methylene chloride	<	<	2 J	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)											
Benzene	<	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Toluene	2 J	2 J	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)											
Acetone	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	.	.	<	<	.	.	<	<	<	.	.

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-605		GW-606		GW-618		GW-620		GW-656	
Location	EXP-I		EXP-I		EXP-E		FTF		T0134	
Date Sampled	07/10/01		01/08/01	07/10/01	05/02/01	10/29/01	04/25/01	10/18/01	05/24/01	11/12/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP
Sample Type	Dup									
Chloroethenes ($\mu\text{g/L}$)										
Tetrachloroethylene	15	14	5	5 J	7	5	18	11	54	49
Trichloroethylene	16	15	<	<	11	11	7	2 J	4,700	3,800
cis-1,2-Dichloroethylene	23	24	<	<	19	23	15	4 J	150	150
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	24	25
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	490	400
Vinyl chloride	<	<	<	<	<	2	<	<	9	10
Chloroethanes ($\mu\text{g/L}$)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	3 J	3 J
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	32	30
Chloroethane	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)										
Carbon tetrachloride	11	11	97	160	<	<	<	<	<	<
Chloroform	7	8	280	350	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)										
Benzene	<	<	1 J	1 J	<	<	<	<	2 J	2 J
Dimethylbenzene	<	<	<	<	<	<	4 J	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	2 J	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)										
Acetone	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	.	.	.	.	.	.	.	.	.	.

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-698		GW-722-06					GW-722-10								
Location	CPT		EXP-J					EXP-J								
Date Sampled	05/23/01	11/13/01	02/20/01	05/01/01	07/31/01	10/30/01	02/21/01	05/03/01	08/02/01	11/05/01	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP
Program	GWPP	GWPP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP
Sample Type																
Chloroethenes ($\mu\text{g/L}$)																
Tetrachloroethene	160	210	<	<	<	<	<	<	5 J	<	2 J					
Trichloroethene	540	450	<	<	<	<	<	<	<	1 J	<	<				
cis-1,2-Dichloroethene	27	15	<	<	<	<	<	<	<	<	<	<				
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<	<	<				
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<	<	<				
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	<	<				
Chloroethanes ($\mu\text{g/L}$)																
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	<				
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	<				
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<				
Chloroethane	<	<	<	<	<	<	<	<	<	<	<	<				
Chloromethanes ($\mu\text{g/L}$)																
Carbon tetrachloride	16	18	<	<	<	<	<	<	<	<	<	<				
Chloroform	19	20	<	<	<	<	<	<	<	<	<	<				
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<	<				
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<				
Petrol. Hydrocarb. ($\mu\text{g/L}$)																
Benzene	<	<	<	<	<	<	<	<	<	<	<	<				
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<				
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	2 J				
Toluene	<	<	<	<	1 J	<	<	<	<	<	<	<				
Styrene	<	<	<	<	<	<	<	<	<	<	<	<				
Miscellaneous ($\mu\text{g/L}$)																
Acetone	<	<	<	<	<	<	<	19	<	<	<	<				
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<	<				
Bromoform	<	<	<	<	<	<	<	<	<	<	<	<				
Bromomethane	<	<	<	<	<	<	<	<	<	<	<	<				
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<	<				
Trichlorofluoromethane	<	<	<	<	<	.	<	.	<	<	<	.				.

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-722-14					GW-722-17				
Location	EXP-J					EXP-J				
Date Sampled	02/26/01		05/07/01	08/07/01	11/06/01	02/26/01	05/07/01	08/08/01		11/06/01
Program	GWPP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	GWPP	WRRP
Sample Type	Dup							Dup		
Chloroethenes ($\mu\text{g/L}$)										
Tetrachloroethene	23	11	<	6	11	21	21	14	7	19
Trichloroethene	3 J	2 J	<	<	2 J	3 J	4 J	2 J	<	3 J
cis-1,2-Dichloroethene	2 J	<	<	<	1 J	2 J	3 J	1 J	<	2 J
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)										
1,1,1-Trichloroethane	<	<	<	<	<	<	1 J	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)										
Carbon tetrachloride	440	170	<	84	140	220	210	220	100	110
Chloroform	22	16	<	10	18	26	19	21	13	29
Methylene chloride	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)										
Benzene	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	3 J	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)										
Acetone	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	4 J	<	.	<	.	2 J	.	3 J	<	.

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-722-20				GW-722-22				GW-722-26				
Location	EXP-J				EXP-J				EXP-J				
Date Sampled	02/22/01	05/03/01	08/07/01	11/05/01	02/22/01	05/03/01	08/02/01	11/05/01	02/20/01	05/02/01	WRRP	WRRP	Dup
Program	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	WRRP	WRRP	
Sample Type													
Chloroethenes ($\mu\text{g/L}$)													
Tetrachloroethylene	36	29	26	31	27	25	22	20	<	<	<	<	
Trichloroethylene	5	6	4 J	5 J	4 J	5 J	3 J	3 J	<	<	<	<	
cis-1,2-Dichloroethylene	4 J	5	3 J	4 J	3 J	4 J	2 J	2 J	<	<	<	<	
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<	
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	<	<	
Chloroethanes ($\mu\text{g/L}$)													
1,1,1-Trichloroethane	<	1 J	<	1 J	<	<	<	<	<	<	<	<	
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	
Chloroethane	<	<	<	<	<	<	<	<	<	<	<	<	
Chloromethanes ($\mu\text{g/L}$)													
Carbon tetrachloride	380	360	320	310	290	230	180	190	<	<	<	<	
Chloroform	54	46	38	53	39	35	25	43	<	<	<	<	
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<	<	
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	
Petrol. Hydrocarb. ($\mu\text{g/L}$)													
Benzene	<	<	<	<	<	<	<	<	<	<	1 J	<	
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	1 J	1 J	
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	3 J	3 J	
Toluene	<	<	<	<	<	<	<	<	<	<	3 J	3 J	
Styrene	<	<	<	<	<	<	<	<	<	<	2 J	2 J	
Miscellaneous ($\mu\text{g/L}$)													
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<	<	
Bromoform	<	<	<	<	<	<	<	<	<	<	<	<	
Bromomethane	<	<	<	<	<	<	<	<	<	<	<	<	
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<	<	
Trichlorofluoromethane	6	.	3 J	.	3 J	.	2 J	.	<	<	.	.	

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-722-26				GW-722-30				GW-722-32			
Location	EXP-J				EXP-J				EXP-J			
Date Sampled	08/01/01	10/31/01		02/20/01	05/01/01	07/31/01	10/31/01	02/21/01	05/02/01	08/01/01	10/31/01	
Program	GWPP	WRRP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	GWPP	WRRP	
Sample Type		Dup										
Chloroethenes ($\mu\text{g/L}$)												
Tetrachloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
Trichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)												
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)												
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<	1 J	<	1 J
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)												
Benzene	<	1 J	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	2 J	3 J	3 J	<	<	<	<	<	<	<	<	<
Toluene	2 J	3 J	3 J	<	<	<	<	<	<	<	<	<
Styrene	2 J	1 J	2 J	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)												
Acetone	7 J	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	.	.	.	.	.	.	.	.	.	.	.

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-722-33				GW-733		GW-735				GW-744	
Location	EXP-J				EXP-J		EXP-J				GRIDK1	
Date Sampled	02/21/01	05/02/01	08/01/01	11/01/01	01/08/01	07/11/01	05/08/01	11/01/01		05/07/01	10/31/01	
Program	GWPP	WRRP	GWPP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	
Sample Type								Dup				
Chloroethenes ($\mu\text{g/L}$)												
Tetrachloroethene	<	<	<	<	<	<	<	<	<	<	<	
Trichloroethene	<	<	<	<	<	<	<	<	<	<	<	
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<	<	
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<	<	
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	<	
Chloroethanes ($\mu\text{g/L}$)												
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	
Chloroethane	<	<	<	<	<	<	<	<	<	<	<	
Chloromethanes ($\mu\text{g/L}$)												
Carbon tetrachloride	<	<	<	<	14	10	<	<	<	<	<	
Chloroform	<	2 J	<	2 J	2 J	1 J	<	<	<	<	<	
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<	
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	
Petrol. Hydrocarb. ($\mu\text{g/L}$)												
Benzene	<	<	<	<	<	<	<	<	<	<	<	
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<	
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	
Toluene	<	<	<	<	<	<	<	<	<	<	<	
Styrene	<	<	<	<	<	<	<	<	<	<	<	
Miscellaneous ($\mu\text{g/L}$)												
Acetone	<	<	<	<	<	<	<	<	<	<	<	
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<	
Bromoform	<	<	<	<	<	<	<	<	<	<	<	
Bromomethane	<	<	<	<	<	<	<	<	<	<	<	
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<	
Trichlorofluoromethane	<	.	<	<	<	<	<	

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-747		GW-750		GW-762				GW-763		
Location	GRIDK2		EXP-J		GRIDJ3				GRIDJ3		
Date Sampled	05/07/01	10/31/01	05/03/01	11/01/01	01/16/01		07/30/01		04/25/01		10/22/01
Program	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP
Sample Type					Dup		Dup		Dup		Dup
Chloroethenes ($\mu\text{g/L}$)											
Tetrachloroethylene	<	<	<	<	1,900	2,000	1,900	2,100	<	<	<
Trichloroethylene	<	<	<	<	160	130	140	130	<	<	<
cis-1,2-Dichloroethylene	<	<	<	<	59	56	62	61	2 J	<	4 J
trans-1,2-Dichloroethylene	<	<	<	<	2 J	<	2 J	2 J	<	<	<
1,1-Dichloroethylene	<	<	<	<	56	37	64	51	<	<	<
Vinyl chloride	<	<	<	<	5	<	5 J	4 J	<	<	1 J
Chloroethanes ($\mu\text{g/L}$)											
1,1,1-Trichloroethane	<	<	<	<	5	<	5 J	5 J	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	10	11	13	12	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)											
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)											
Benzene	<	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)											
Acetone	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<	<	<

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-769		GW-770		GW-771		GW-772		GW-782	
Location	GRIDG3		GRIDG3		GRIDC1		GRIDC1		GRIDE3	
Date Sampled	04/17/01	10/16/01	04/17/01	10/15/01	05/22/01	11/05/01	05/22/01		11/06/01	04/18/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type							Dup			Dup
Chloroethenes ($\mu\text{g/L}$)										
Tetrachloroethylene	12	15	<	<	<	<	<	<	<	200
Trichloroethylene	3 J	4 J	<	<	<	<	<	<	<	63
cis-1,2-Dichloroethylene	<	4 J	<	<	<	<	<	<	<	12
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	3 J
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	28
Vinyl chloride	<	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	2 J
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	120
Chloroethane	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)										
Carbon tetrachloride	38	73	<	4 J	<	<	<	<	<	<
Chloroform	5	4 J	7	8	<	<	<	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)										
Benzene	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)										
Acetone	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<	<

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-782		GW-784		GW-785		GW-789		GW-791		
Location	GRIDE3		GRIDD1		GRIDD1		GRIDF3		GRIDD2		
Date Sampled	09/05/01	10/16/01	05/21/01	11/07/01	05/21/01	11/07/01	04/16/01	10/15/01	04/19/01	10/17/01	
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type										Dup	
Chloroethenes ($\mu\text{g/L}$)											
Tetrachloroethylene	200	190	<	<	<	<	<	<	53	100	96
Trichloroethylene	59	54	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	15	13	<	<	<	<	<	<	<	<	<
trans-1,2-Dichloroethylene	3 J	2 J	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	45	65	<	<	<	<	<	<	<	<	<
Vinyl chloride	2	4	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)											
1,1,1-Trichloroethane	13	26	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	180	240	<	<	<	<	<	<	<	<	<
Chloroethane	8	26	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)											
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	<	<
Chloroform	<	<	<	<	<	<	<	1 J	<	<	<
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)											
Benzene	<	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<
Toluene	<	<	<	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)											
Acetone	<	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	<
Bromoform	<	<	<	<	<	<	<	<	<	<	<
Bromomethane	<	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<	<	<

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	GW-816		GW-832		LRSPW		NPR07.0SW			NPR12.0SW	
Location	EXP-SR		NHP		EXP-SW		EXP-NPR			EXP-NPR	
Date Sampled	05/03/01		10/31/01	01/11/01	07/30/01	05/02/01	10/30/01	05/09/01		11/27/01	05/09/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type	Dup								Dup		
Chloroethenes (µg/L)											
Tetrachloroethylene	<	<	<	3 J	6	3 J	2 J	<	<	<	
Trichloroethylene	<	<	<	<	1 J	<	<	<	<	<	
cis-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	<	
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	
Chloroethanes (µg/L)											
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<	
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<	
Chloroethane	<	<	<	<	<	<	<	<	<	<	
Chloromethanes (µg/L)											
Carbon tetrachloride	<	<	<	8	17	8	3 J	<	<	<	
Chloroform	<	<	<	4 J	4 J	6	3 J	<	<	<	
Methylene chloride	<	<	<	<	<	<	<	<	<	<	
Chloromethane	<	<	<	<	<	<	<	<	<	<	
Petrol. Hydrocarb. (µg/L)											
Benzene	<	<	<	<	<	<	<	<	<	<	
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	
Toluene	<	<	<	<	<	<	<	<	<	<	
Styrene	<	<	<	<	<	<	<	<	<	<	
Miscellaneous (µg/L)											
Acetone	<	<	<	<	<	<	<	<	<	<	
Bromodichloromethane	<	<	<	<	<	<	<	<	<	<	
Bromoform	<	<	<	<	<	<	<	<	<	<	
Bromomethane	<	<	<	<	<	<	<	<	<	<	
Dibromochloromethane	<	<	<	<	<	<	<	<	<	<	
Trichlorofluoromethane	<	<	<	<	.	.	<	<	<	<	

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	NPR12.0SW		NPR23.0SW		OF 51		OF 200				SCR7.1SP	
Location	EXP-NPR		EXP-NPR		EXP-SW		EXP-SW				EXP-UV	
Date Sampled	11/27/01	05/09/01	11/27/01	02/27/01	08/28/01	02/14/01	02/27/01	08/28/01	09/04/01	01/29/01	08/13/01	
Program	GWPP	GWPP	GWPP	WRRP								
Sample Type												
Chloroethenes ($\mu\text{g/L}$)												
Tetrachloroethene	<	<	<	10	25	5	3 J	1 J	4 J	<	<	
Trichloroethene	<	<	<	3 J	9	1 J	<	<	1 J	2 J	<	
cis-1,2-Dichloroethene	<	<	<	3 J	11	2 J	<	<	1 J	<	<	
trans-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<	<	
Vinyl chloride	<	<	<	<	<	<	<	<	<	<	<	
Chloroethanes ($\mu\text{g/L}$)												
1,1,1-Trichloroethane	<	<	<	1 J	<	<	<	<	<	<	<	
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<	<	
1,1-Dichloroethane	<	<	<	2 J	<	<	<	<	<	<	<	
Chloroethane	<	<	<	<	<	<	<	<	<	<	<	
Chloromethanes ($\mu\text{g/L}$)												
Carbon tetrachloride	<	<	<	<	2 J	<	<	<	<	<	<	
Chloroform	<	<	<	2 J	6	4 J	3 J	5 J	5 J	<	<	
Methylene chloride	<	<	<	<	<	<	<	<	<	<	<	
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	
Petrol. Hydrocarb. ($\mu\text{g/L}$)												
Benzene	<	<	<	<	<	<	<	<	<	<	<	
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<	<	
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	
Toluene	<	<	<	<	<	<	<	<	<	<	<	
Styrene	<	<	<	<	<	<	<	<	<	<	<	
Miscellaneous ($\mu\text{g/L}$)												
Acetone	<	<	<	<	<	<	<	72	<	<	<	
Bromodichloromethane	<	<	<	<	<	<	<	3 J	2 J	<	<	
Bromoform	<	<	<	<	<	<	<	7	1 J	<	<	
Bromomethane	<	<	<	<	<	<	<	<	<	<	<	
Dibromochloromethane	<	<	<	<	<	<	<	3 J	<	<	<	
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<	<	<	

APPENDIX E.2: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Sampling Point	SCR7.8SP		STATION 17				STATION 8			
Location	EXP-UV		EXP-SW				EXP-SW			
Date Sampled	01/29/01	08/13/01	02/14/01	02/27/01	08/28/01	09/04/01	02/14/01	02/27/01	08/28/01	09/04/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type										
Chloroethenes ($\mu\text{g/L}$)										
Tetrachloroethylene	<	<	2 J	1 J	<	<	3 J	1 J	<	1 J
Trichloroethylene	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethylene	<	<	<	<	<	<	1 J	<	<	<
trans-1,2-Dichloroethylene	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethylene	<	<	<	<	<	<	<	<	<	<
Vinyl chloride	<	<	<	<	<	<	<	<	<	<
Chloroethanes ($\mu\text{g/L}$)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1,2-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<
Chloroethane	<	<	<	<	<	<	<	<	<	<
Chloromethanes ($\mu\text{g/L}$)										
Carbon tetrachloride	<	<	<	<	<	<	<	<	<	<
Chloroform	<	<	2 J	2 J	4 J	2 J	4 J	4 J	6	4 J
Methylene chloride	<	<	<	<	<	<	<	<	<	<
Chloromethane	<	<	<	<	<	<	<	<	<	<
Petrol. Hydrocarb. ($\mu\text{g/L}$)										
Benzene	<	<	<	<	<	<	<	<	<	<
Dimethylbenzene	<	<	<	<	<	<	<	<	<	<
Ethylbenzene	<	<	<	<	<	<	<	<	<	<
Toluene	<	1 J	<	<	<	<	<	<	<	<
Styrene	<	<	<	<	<	<	<	<	<	<
Miscellaneous ($\mu\text{g/L}$)										
Acetone	<	<	<	<	<	<	<	<	<	<
Bromodichloromethane	<	<	<	<	1 J	<	1 J	1 J	3 J	1 J
Bromoform	<	<	<	<	<	<	<	<	3 J	<
Bromomethane	<	<	<	<	<	<	<	<	<	<
Dibromochloromethane	<	<	<	<	<	<	<	<	2 J	<
Trichlorofluoromethane

APPENDIX E.3
RADIOLOGICAL ANALYTES

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Activity	Error	MDA	Activity	Error	MDA
GHK2.51ESW	EXP-NPR	05/23/01	GWPP	<MDA	.	3.8	6.7	3.7	5.5
GHK2.51WSW	EXP-NPR	05/09/01	GWPP	<MDA	.	3.7	<MDA	.	6.9
GHK2.51WSW	EXP-NPR	11/27/01	GWPP	<MDA	.	3.3	<MDA	.	8.3
GW-108	S3	01/04/01	WRRP	429	71.84	8.55	10,237.68	188.87	73.24
GW-108	S3	07/11/01	WRRP	153.95	107.04	103.36	11,400	189	65.7
GW-151	NHP	01/11/01	WRRP	<MDA	.	2.41	3.97	1.67	2.15
GW-151	NHP	07/30/01	WRRP	<MDA	.	1.07	3.12	1.32	1.26
GW-153	NHP	04/26/01	GWPP	<MDA	.	4.4	<MDA	.	7.6
GW-153	NHP	10/23/01	GWPP	<MDA	.	3.7	<MDA	.	8.4
GW-154	NHP	01/11/01	WRRP	685.09	16.94	2.88	92.67	3.96	2.43
GW-154	NHP	07/30/01	WRRP	391.44	10.4	2.33	51.71	2.72	1.89
GW-169	EXP-UV	05/01/01	WRRP	1.6	0.84	0.94	5.41	1.48	1.93
GW-169	EXP-UV	07/31/01	WRRP	<MDA	.	0.74	2.27	0.95	0.9
GW-170	EXP-UV	01/10/01	WRRP	1.47	0.57	0.47	7.96	1	0.84
GW-170 Dup	EXP-UV	01/10/01	WRRP	<MDA	.	0.87	8.96	1	0.81
GW-170	EXP-UV	05/01/01	WRRP	2.7	0.98	0.91	4.75	1.44	1.92
GW-170 Dup	EXP-UV	05/01/01	WRRP	1.78	0.93	1.05	10.02	1.69	1.97
GW-170	EXP-UV	07/31/01	WRRP	0.86	0.74	0.73	7.5	0.97	0.82
GW-170 Dup	EXP-UV	07/31/01	WRRP	0.99	0.4	0.32	5.93	1	0.89
GW-170	EXP-UV	11/07/01	WRRP	<MDA	.	1.77	7.08	1.64	2.06
GW-170 Dup	EXP-UV	11/07/01	WRRP	<MDA	.	1.74	7.63	1.61	1.97
GW-171	EXP-UV	01/29/01	WRRP	1.81	0.99	1.08	5.99	1.34	1.63
GW-171	EXP-UV	08/01/01	WRRP	<MDA	.	2.05	8.57	1.54	1.79
GW-172	EXP-UV	01/29/01	WRRP	<MDA	.	2.33	<MDA	.	2.41
GW-172	EXP-UV	08/01/01	WRRP	<MDA	.	2.27	30.5 Q	3.1	2.53
GW-192	B4	04/24/01	GWPP	<MDA	.	2.8	11	2.9	1.6
GW-192	B4	10/17/01	GWPP	<MDA	.	6.5	8.3	4.8	7.2
GW-193	T2331	01/08/01	WRRP	2.61	1.03	0.86	6.68	0.68	0.55
GW-193	T2331	07/12/01	WRRP	3.85	2.5	3.39	10.53	2.08	2.47
GW-204	T0134	05/23/01	GWPP	74	9.5	3.6	37	6.2	6.3
GW-204	T0134	09/05/01	GWPP	<MDA	.	53	<MDA	.	110
GW-204	T0134	11/12/01	GWPP	21	5.1	3.3	9.2	5.6	8.6
GW-207	EXP-SR	05/02/01	GWPP	<MDA	.	2.5	<MDA	.	7.3
GW-207	EXP-SR	10/30/01	GWPP	<MDA	.	4.6	7.1	4.2	6.3
GW-208	EXP-SR	05/02/01	GWPP	<MDA	.	2.7	9	5.3	8
GW-208	EXP-SR	10/30/01	GWPP	<MDA	.	3.7	<MDA	.	9.2
GW-219	UOV	05/24/01	GWPP	200	15	2.2	150	11	5.7
GW-219	UOV	11/06/01	GWPP	140	14	5.1	77	9	7.8
GW-219 Dup	UOV	11/06/01	GWPP	180	15	4.3	120	11	7.5
GW-220	NHP	04/30/01	GWPP	<MDA	.	4.5	7.7	4.9	7.4
GW-220	NHP	10/23/01	GWPP	<MDA	.	3.4	<MDA	.	7.1
GW-223	NHP	01/11/01	WRRP	11.28	2.56	2.28	7.93	1.49	1.68
GW-223	NHP	07/31/01	WRRP	9.87	2.03	1.63	1.61	1.44	1.4
GW-230	EXP-UV	01/29/01	WRRP	<MDA	.	2.6	<MDA	.	4.65
GW-230	EXP-UV	08/01/01	WRRP	<MDA	.	2.84	57.5 Q	3.76	2.85
GW-232	EXP-UV	01/10/01	WRRP	<MDA	.	1.63	<MDA	.	1.95
GW-232	EXP-UV	05/01/01	WRRP	4.85	2.55	2.34	6.82	3.57	3.43
GW-232	EXP-UV	07/31/01	WRRP	<MDA	.	2.56	<MDA	.	2.58
GW-232	EXP-UV	11/07/01	WRRP	81.3	6.86	3.74	365.61	6.55	2.6

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Activity	Error	MDA	Activity	Error	MDA
GW-240	NHP	04/26/01	GWPP	<MDA	.	5.1	<MDA	.	8.6
GW-240	NHP	10/22/01	GWPP	<MDA	.	5.5	<MDA	.	8.5
GW-251	S2	04/24/01	GWPP	7.4	3.3	3.2	<MDA	.	6.3
GW-251	S2	10/18/01	GWPP	<MDA	.	5.4	<MDA	.	7.2
GW-253	S2	05/02/01	WRRP	24.66	9.54	8.39	16.02	11.31	10.96
GW-253	S2	10/29/01	WRRP	101.54	17.82	13.07	66.56	10.91	9.46
GW-381	NHP	05/01/01	GWPP	<MDA	.	4.9	<MDA	.	9.2
GW-381	NHP	10/24/01	GWPP	<MDA	.	4.4	<MDA	.	9.1
GW-382	NHP	01/22/01	WRRP	1.8	1.24	1.2	3.49	1.31	1.24
GW-382	NHP	07/31/01	WRRP	<MDA	.	1.37	4.72	1.49	1.4
GW-383	NHP	04/30/01	GWPP	<MDA	.	5.4	<MDA	.	7
GW-383	NHP	10/24/01	GWPP	<MDA	.	4.6	<MDA	.	7.5
GW-383 Dup	NHP	10/24/01	GWPP	<MDA	.	4.5	<MDA	.	7.3
GW-605	EXP-I	01/05/01	WRRP	26.9	2.43	1.36	6.22	1.61	1.76
GW-605 Dup	EXP-I	01/05/01	WRRP	41.87	4.37	2.3	12.03	1.79	1.98
GW-605	EXP-I	07/10/01	WRRP	40.1	3.23	1.66	14	2.6	2.33
GW-605 Dup	EXP-I	07/10/01	WRRP	36.3	2.5	0.93	14.5	1.77	1.48
GW-606	EXP-I	01/08/01	WRRP	2.93	1.25	1.13	5.76	1.99	1.88
GW-606	EXP-I	07/10/01	WRRP	7.25	1.73	1.19	<MDA	.	3.21
GW-618	EXP-E	05/02/01	WRRP	<MDA	.	1.74	4.07	1.74	2.26
GW-618	EXP-E	10/29/01	WRRP	4.61	2.13	2.27	9.11	1.88	1.94
GW-620	FTF	04/25/01	GWPP	<MDA	.	4.2	9.4	4.7	6.9
GW-620	FTF	10/18/01	GWPP	<MDA	.	4.9	12	4.9	6.9
GW-656	T0134	05/24/01	GWPP	<MDA	.	2.9	<MDA	.	7.5
GW-656	T0134	11/12/01	GWPP	<MDA	.	4.2	<MDA	.	7.7
GW-698	CPT	05/23/01	GWPP	<MDA	.	4.4	<MDA	.	7.6
GW-698	CPT	11/13/01	GWPP	<MDA	.	8.1	<MDA	.	7.7
GW-722-06	EXP-J	02/20/01	GWPP	<MDA	.	5	<MDA	.	9.3
GW-722-06	EXP-J	05/01/01	WRRP	4.39	2.5	2.33	42.97 Q	5.06	4.31
GW-722-06	EXP-J	07/31/01	GWPP	<MDA	.	8.4	<MDA	.	11
GW-722-06	EXP-J	10/30/01	WRRP	<MDA	.	3.14	8.46	3.67	3.49
GW-722-10	EXP-J	02/21/01	GWPP	<MDA	.	4.8	<MDA	.	9.3
GW-722-10	EXP-J	05/03/01	WRRP	<MDA	.	2.38	43.3 Q	4.9	4.15
GW-722-10	EXP-J	08/02/01	GWPP	<MDA	.	6.8	<MDA	.	6.5
GW-722-10	EXP-J	11/05/01	WRRP	<MDA	.	3.33	<MDA	.	2.89
GW-722-14	EXP-J	02/26/01	GWPP	<MDA	.	3.5	<MDA	.	5.5
GW-722-14 Dup	EXP-J	02/26/01	GWPP	4.9	2.8	3.2	5.7	3.7	5.6
GW-722-14	EXP-J	05/07/01	WRRP	1.52	1.02	0.95	<MDA	.	3.83
GW-722-14	EXP-J	08/07/01	GWPP	<MDA	.	2.8	<MDA	.	8.8
GW-722-14	EXP-J	11/06/01	WRRP	<MDA	.	2.38	9.7	6.98	6.77
GW-722-17	EXP-J	02/26/01	GWPP	<MDA	.	3.8	8.9	4.9	7.3
GW-722-17	EXP-J	05/07/01	WRRP	<MDA	.	1.69	4.69	3.3	3.2
GW-722-17	EXP-J	08/08/01	GWPP	<MDA	.	3.4	<MDA	.	8
GW-722-17 Dup	EXP-J	08/08/01	GWPP	<MDA	.	2.5	<MDA	.	8.4
GW-722-17	EXP-J	11/06/01	WRRP	<MDA	.	2.02	3.53	3.32	3.24
GW-722-20	EXP-J	02/22/01	GWPP	<MDA	.	3.7	<MDA	.	5.6
GW-722-20	EXP-J	05/03/01	WRRP	<MDA	.	1.8	4.5	4.04	3.93
GW-722-20	EXP-J	08/07/01	GWPP	<MDA	.	3.2	<MDA	.	7.7
GW-722-20	EXP-J	11/05/01	WRRP	<MDA	.	1.92	4.11	1.96	2.26

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Activity	Error	MDA	Activity	Error	MDA
GW-722-22	EXP-J	02/22/01	GWPP	<MDA	.	3.7	<MDA	.	6.8
GW-722-22	EXP-J	05/03/01	WRRP	<MDA	.	1.86	<MDA	.	3.96
GW-722-22	EXP-J	08/02/01	GWPP	<MDA	.	3.7	<MDA	.	5.6
GW-722-22	EXP-J	11/05/01	WRRP	<MDA	.	2.09	5.94	2.08	2.34
GW-722-26	EXP-J	02/20/01	GWPP	<MDA	.	3.8	<MDA	.	9.4
GW-722-26	EXP-J	05/02/01	WRRP	<MDA	.	1.74	22.4 Q	4.32	3.91
GW-722-26 Dup	EXP-J	05/02/01	WRRP	<MDA	.	1.73	<MDA	.	3.9
GW-722-26	EXP-J	08/01/01	GWPP	<MDA	.	3.4	<MDA	.	6
GW-722-26	EXP-J	10/31/01	WRRP	<MDA	.	1.11	3.76	1.94	2.25
GW-722-26 Dup	EXP-J	10/31/01	WRRP	<MDA	.	1.73	3.14	1.81	2.11
GW-722-30	EXP-J	02/20/01	GWPP	<MDA	.	2.9	<MDA	.	7.3
GW-722-30	EXP-J	05/01/01	WRRP	1.96	1.41	1.36	18.4 Q	4.24	3.9
GW-722-30	EXP-J	07/31/01	GWPP	<MDA	.	3.3	<MDA	.	6.8
GW-722-30	EXP-J	10/31/01	WRRP	1.41	1.05	1.2	7.65	1.85	1.98
GW-722-32	EXP-J	02/21/01	GWPP	<MDA	.	4	<MDA	.	7.2
GW-722-32	EXP-J	05/02/01	WRRP	<MDA	.	1.8	<MDA	.	3.93
GW-722-32	EXP-J	08/01/01	GWPP	<MDA	.	3.3	<MDA	.	8.2
GW-722-32	EXP-J	10/31/01	WRRP	<MDA	.	2.08	5.2	2.09	2.38
GW-722-33	EXP-J	02/21/01	GWPP	<MDA	.	3.6	<MDA	.	7.8
GW-722-33	EXP-J	05/02/01	WRRP	<MDA	.	1.77	<MDA	.	3.92
GW-722-33	EXP-J	08/01/01	GWPP	<MDA	.	4.4	<MDA	.	6.1
GW-722-33	EXP-J	11/01/01	WRRP	<MDA	.	1.73	<MDA	.	3.53
GW-733	EXP-J	01/08/01	WRRP	0.89	0.71	0.7	1.61	0.9	0.87
GW-733	EXP-J	07/11/01	WRRP	<MDA	.	1.59	2.76	1.22	1.7
GW-735	EXP-J	05/08/01	GWPP	<MDA	.	3.6	<MDA	.	6
GW-735	EXP-J	11/01/01	GWPP	<MDA	.	7.5	<MDA	.	8.1
GW-735 Dup	EXP-J	11/01/01	GWPP	<MDA	.	4.4	<MDA	.	8.4
GW-744	GRIDK1	05/07/01	GWPP	<MDA	.	2.4	6.7	4.4	6.7
GW-744	GRIDK1	10/31/01	GWPP	<MDA	.	4	<MDA	.	6.1
GW-747	GRIDK2	05/07/01	GWPP	<MDA	.	2.4	<MDA	.	8.5
GW-747	GRIDK2	10/31/01	GWPP	<MDA	.	3.6	<MDA	.	6.4
GW-750	EXP-J	05/03/01	GWPP	<MDA	.	3.2	<MDA	.	8.7
GW-750	EXP-J	11/01/01	GWPP	<MDA	.	5.5	<MDA	.	7.4
GW-762	GRIDJ3	01/16/01	WRRP	<MDA	.	2.95	<MDA	.	3.84
GW-762 Dup	GRIDJ3	01/16/01	WRRP	<MDA	.	1.93	4.21	1.81	2.08
GW-762	GRIDJ3	07/30/01	WRRP	2.57	0.83	0.6	4.09	1.63	1.54
GW-762 Dup	GRIDJ3	07/30/01	WRRP	<MDA	.	1.22	2.21	2.07	2.02
GW-763	GRIDJ3	04/25/01	GWPP	<MDA	.	3.7	<MDA	.	8.8
GW-763 Dup	GRIDJ3	04/25/01	GWPP	<MDA	.	3.4	<MDA	.	7.1
GW-763	GRIDJ3	10/22/01	GWPP	27	6.7	6.1	<MDA	.	8
GW-769	GRIDG3	04/17/01	GWPP	<MDA	.	2.6	<MDA	.	7.8
GW-769	GRIDG3	10/16/01	GWPP	<MDA	.	5.6	<MDA	.	8.2
GW-770	GRIDG3	04/17/01	GWPP	<MDA	.	3.3	<MDA	.	7.1
GW-770	GRIDG3	10/15/01	GWPP	<MDA	.	5.7	<MDA	.	8
GW-771	GRIDC1	05/22/01	GWPP	1.2	1.2	0.79	<MDA	.	7.1
GW-771	GRIDC1	11/05/01	GWPP	<MDA	.	4.4	<MDA	.	7.6
GW-772	GRIDC1	05/22/01	GWPP	<MDA	.	3.4	<MDA	.	7.2
GW-772 Dup	GRIDC1	05/22/01	GWPP	<MDA	.	2.2	<MDA	.	8.2
GW-772	GRIDC1	11/06/01	GWPP	<MDA	.	4.7	<MDA	.	8.9

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Activity	Error	MDA	Activity	Error	MDA
GW-782	GRIDE3	04/18/01	GWPP	64	8.8	2.7	13	4.9	6.7
GW-782 Dup	GRIDE3	04/18/01	GWPP	56	8.2	3.4	7.6	4.7	7.2
GW-782	GRIDE3	09/05/01	GWPP	<MDA	.	51	<MDA	.	89
GW-782	GRIDE3	10/16/01	GWPP	41	7.2	3.6	13	5.6	8
GW-784	GRIDD1	05/21/01	GWPP	<MDA	.	2.7	<MDA	.	8.7
GW-784	GRIDD1	11/07/01	GWPP	<MDA	.	5.3	<MDA	.	6.9
GW-785	GRIDD1	05/21/01	GWPP	1.4	1.2	0.74	15	4.8	6.3
GW-785	GRIDD1	11/07/01	GWPP	<MDA	.	4.2	<MDA	.	6.6
GW-789	GRIDF3	04/16/01	GWPP	<MDA	.	3	<MDA	.	6.9
GW-789	GRIDF3	10/15/01	GWPP	<MDA	.	6	<MDA	.	8.1
GW-791	GRIDD2	04/19/01	GWPP	<MDA	.	3.9	<MDA	.	5.8
GW-791	GRIDD2	10/17/01	GWPP	<MDA	.	5.8	<MDA	.	9.6
GW-791 Dup	GRIDD2	10/17/01	GWPP	<MDA	.	5.7	<MDA	.	6.6
GW-816	EXP-SR	05/03/01	GWPP	<MDA	.	5.3	<MDA	.	18
GW-816 Dup	EXP-SR	05/03/01	GWPP	5.1	3.4	1.5	<MDA	.	16
GW-816	EXP-SR	10/31/01	GWPP	<MDA	.	2.9	7.5	3.9	5.7
GW-832	NHP	01/11/01	WRRP	<MDA	.	1.35	3.18	1.42	1.84
GW-832	NHP	07/30/01	WRRP	7.06	1.43	1.09	6.23	1.48	1.35
LRSPW	EXP-SW	05/02/01	GWPP	3.6	2.5	3.2	<MDA	.	9.1
LRSPW	EXP-SW	10/30/01	GWPP	<MDA	.	4.5	<MDA	.	6.9
NPR07.0SW	EXP-NPR	05/09/01	GWPP	<MDA	.	4.3	<MDA	.	6.6
NPR07.0SW Dup	EXP-NPR	05/09/01	GWPP	<MDA	.	4.7	<MDA	.	5.5
NPR07.0SW	EXP-NPR	11/27/01	GWPP	<MDA	.	3.2	10	5.3	8
NPR12.0SW	EXP-NPR	05/09/01	GWPP	<MDA	.	3.9	<MDA	.	6.1
NPR12.0SW	EXP-NPR	11/27/01	GWPP	3.5	2.3	2.6	<MDA	.	10
NPR23.0SW	EXP-NPR	05/09/01	GWPP	<MDA	.	3.3	<MDA	.	6.2
NPR23.0SW	EXP-NPR	11/27/01	GWPP	<MDA	.	2.7	<MDA	.	9.5
OF 51	EXP-SW	02/27/01	WRRP	1.96	1.37	1.89	3.93	1.38	1.87
OF 51	EXP-SW	08/28/01	WRRP	3.96	1.53	1.55	2.83	1.37	1.92
SCR7.1SP	EXP-UV	01/29/01	WRRP	1.97	1.27	1.65	3.39	1.19	1.59
SCR7.1SP	EXP-UV	08/13/01	WRRP	<MDA	.	1.53	3.65	1.24	1.53
SCR7.8SP	EXP-UV	01/29/01	WRRP	<MDA	.	1.85	1.96	1.14	1.63
SCR7.8SP	EXP-UV	08/13/01	WRRP	<MDA	.	1.67	<MDA	.	2.16
STATION 8	EXP-SW	02/14/01	WRRP	16.92	2.54	0.82	10.67	1.57	1.7
STATION 8	EXP-SW	02/27/01	WRRP	13.26	2.26	1.7	9.32	1.59	1.83
STATION 8	EXP-SW	08/28/01	WRRP	3.91	1.6	1.67	4.26	1.46	1.95
STATION 8	EXP-SW	09/04/01	WRRP	8.64	1.96	1.55	6.42	1.5	1.86

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GHK2.51ESW			GHK2.51WSW					
Location	EXP-NPR			EXP-NPR					
Date Sampled	05/23/01			05/09/01			11/27/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.8	<MDA	.	3.7	<MDA	.	3.3
Gross Beta	6.7	3.7	5.5	<MDA	.	6.9	<MDA	.	8.3
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.48	<MDA	.	0.2	0.17	0.13	0.14
Uranium-235	<MDA	.	0.13	<MDA	.	0.1	<MDA	.	0.071
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	<MDA	.	0.32	<MDA	.	0.081	<MDA	.	0.14

Sampling Point	GW-108						GW-151		
Location	S3						NHP		
Date Sampled	01/04/01			07/11/01			01/11/01		
Program	WRRP			WRRP			WRRP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	429	71.84	8.55	153.95	107.04	103.36	<MDA	.	2.41
Gross Beta	10,237.68	188.87	73.24	11,400	189	65.7	3.97	1.67	2.15
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	26,405.81	123.58	21.47	26,900	93	13.3	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	0.59	0.34	0.33
Uranium-235	.	.	.	.	.	.	<MDA	.	0.13
Uranium-236	.	.	.	.	.	.	<MDA	.	0.27
Uranium-238	.	.	.	.	.	.	0.26	0.22	0.24

Sampling Point	GW-151			GW-154					
Location	NHP			NHP					
Date Sampled	07/30/01			01/11/01			07/30/01		
Program	WRRP			WRRP			WRRP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	1.07	685.09	16.94	2.88	391.44	10.4	2.33
Gross Beta	3.12	1.32	1.26	92.67	3.96	2.43	51.71	2.72	1.89
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	0.59	0.38	0.5	521.6	111.8	0.46	268.8	68.45	1.09
Uranium-235	<MDA	.	0.24	10.96	2.94	0.44	9.11	3.16	0.78
Uranium-236	0.22	0.21	0.21	14.08	3.56	0.35	4.52	1.86	0.86
Uranium-238	<MDA	.	0.31	176.2	38.13	0.41	186.1	47.63	1.11

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-193						GW-204		
Location	T2331						T0134		
Date Sampled	01/08/01			07/12/01			05/23/01		
Program	WRRP			WRRP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	2.61	1.03	0.86	3.85	2.5	3.39	74	9.5	3.6
Gross Beta	6.68	0.68	0.55	10.53	2.08	2.47	37	6.2	6.3
Radium-223/224/226	.	.	.	.	.	.	<MDA	.	0.24
Technetium-99	<MDA	.	22.84	<MDA	.	13.3	<MDA	.	13
Thorium-230	.	.	.	.	.	.	<MDA	.	0.26
Thorium-234	.	.	.	.	.	.	29	3.5	0.32
Uranium-234	.	.	.	.	.	.	33	3.8	0.25
Uranium-235	.	.	.	.	.	.	1.6	0.49	0.09
Uranium-236	.	.	.	.	.	.	29	3.5	0.32
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-204						GW-207		
Location	T0134						EXP-SR		
Date Sampled	09/05/01			11/12/01			05/02/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	53	21	5.1	3.3	<MDA	.	2.5
Gross Beta	<MDA	.	110	9.2	5.6	8.6	<MDA	.	7.3
Radium-223/224/226	.	.	.	<MDA	.	0.46	.	.	.
Technetium-99	.	.	.	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	<MDA	.	0.57	.	.	.
Thorium-234	.	.	.	11	1.4	0.21	.	.	.
Uranium-234	25	12	10	14	1.7	0.06	.	.	.
Uranium-235	<MDA	.	4.1	0.63	0.27	0.074	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	19	10	8	11	1.4	0.21	.	.	.

Sampling Point	GW-207			GW-208					
Location	EXP-SR			EXP-SR					
Date Sampled	10/30/01			05/02/01			10/30/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	4.6	<MDA	.	2.7	<MDA	.	3.7
Gross Beta	7.1	4.2	6.3	9	5.3	8	<MDA	.	9.2
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	30	8.5	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-219								
Location	UOV								
Date Sampled	05/24/01			11/06/01					
Program	GWPP			GWPP					
Type							DUP		
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	200	15	2.2	140	14	5.1	180	15	4.3
Gross Beta	150	11	5.7	77	9	7.8	120	11	7.5
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	16	8.7	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	29	4.3	0.52	22	3	0.34	28	3.9	0.31
Uranium-235	2.8	0.86	0.15	2.1	0.63	0.27	2.4	0.76	0.49
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	190	24	0.48	150	17	0.27	180	21	0.36

Sampling Point	GW-223							GW-253		
Location	NHP							S2		
Date Sampled	01/11/01			07/31/01			05/02/01			
Program	WRRP			WRRP			WRRP			
Type										
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA	
Gross Alpha	11.28	2.56	2.28	9.87	2.03	1.63	24.66	9.54	8.39	
Gross Beta	7.93	1.49	1.68	1.61	1.44	1.4	16.02	11.31	10.96	
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	4.34	1.15	0.36	3.53	0.99	0.2	6.9	1.82	0.32	
Uranium-235	<MDA	.	0.3	<MDA	.	0.24	0.2 R	0.23	0.18	
Uranium-236	0.26	0.22	0.21	<MDA	.	0.19	0.3	0.27	0.16	
Uranium-238	9.97	2.2	0.24	9.26	2.13	0.22	2.41	0.86	0.14	

Sampling Point	GW-253			GW-605						
Location	S2			EXP-I						
Date Sampled	10/29/01			01/05/01						
Program	WRRP			WRRP						
Type								DUP		
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA	
Gross Alpha	101.54	17.82	13.07	26.9	2.43	1.36	41.87	4.37	2.3	
Gross Beta	66.56	10.91	9.46	6.22	1.61	1.76	12.03	1.79	1.98	
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	21.76	12.48	20.48	<MDA	.	19.7	
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	7.53	1.97	0.65	.	.	.	.	.	.
Uranium-235	<MDA	.	0.44	.	.	.	.	.	.
Uranium-236	<MDA	.	0.4	.	.	.	.	.	.
Uranium-238	1.71	0.75	0.75	.	.	.	.	.	.

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-605						GW-606		
Location	EXP-I						EXP-I		
Date Sampled	07/10/01						01/08/01		
Program	WRRP						WRRP		
Type	DUP								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	40.1	3.23	1.66	36.3	2.5	0.93	2.93	1.25	1.13
Gross Beta	14	2.6	2.33	14.5	1.77	1.48	5.76	1.99	1.88
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13.54	<MDA	.	13.38	<MDA	.	22.06
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-606			GW-618					
Location	EXP-I			EXP-E					
Date Sampled	07/10/01			05/02/01			10/29/01		
Program	WRRP			WRRP			WRRP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	7.25	1.73	1.19	<MDA	.	1.74	4.61	2.13	2.27
Gross Beta	<MDA	.	3.21	4.07	1.74	2.26	9.11	1.88	1.94
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13.73	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	<MDA	.	0.43	0.96	0.45	0.26
Uranium-235	.	.	.	<MDA	.	0.4	<MDA	.	0.24
Uranium-236	.	.	.	<MDA	.	0.35	0.24	0.22	0.13
Uranium-238	.	.	.	<MDA	.	0.29	0.42	0.3	0.33

Sampling Point	GW-656						GW-698		
Location	T0134						B8110		
Date Sampled	05/24/01			11/12/01			05/23/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.9	<MDA	.	4.2	<MDA	.	4.4
Gross Beta	<MDA	.	7.5	<MDA	.	7.7	<MDA	.	7.6
Radium-223/224/226	<MDA	.	0.22	<MDA	.	0.44	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	0.32	0.27	0.15	0.78	0.43	0.43	.	.	.
Thorium-234	<MDA	.	0.23	0.28	0.16	0.14	.	.	.
Uranium-234	0.26	0.18	0.18	0.21	0.15	0.2	.	.	.
Uranium-235	<MDA	.	0.095	<MDA	.	0.17	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	<MDA	.	0.23	0.28	0.16	0.14	.	.	.

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-698			GW-722-10					
Location	CPT			EXP-J					
Date Sampled	11/13/01			02/21/01			08/02/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	8.1	<MDA	.	4.8	<MDA	.	6.8
Gross Beta	<MDA	.	7.7	<MDA	.	9.3	<MDA	.	6.5
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-722-14								
Location	EXP-J								
Date Sampled	02/26/01						08/07/01		
Program	GWPP						GWPP		
Type	DUP								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.5	4.9	2.8	3.2	<MDA	.	2.8
Gross Beta	<MDA	.	5.5	5.7	3.7	5.6	<MDA	.	8.8
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-722-17								
Location	EXP-J								
Date Sampled	02/26/01			08/08/01					
Program	GWPP			GWPP					
Type	DUP								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.8	<MDA	.	3.4	<MDA	.	2.5
Gross Beta	8.9	4.9	7.3	<MDA	.	8	<MDA	.	8.4
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-722-20						GW-722-22		
Location	EXP-J						EXP-J		
Date Sampled	02/22/01			08/07/01			02/22/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.7	<MDA	.	3.2	<MDA	.	3.7
Gross Beta	<MDA	.	5.6	<MDA	.	7.7	<MDA	.	6.8
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-722-22			GW-733					
Location	EXP-J			EXP-J					
Date Sampled	08/02/01			01/08/01			07/11/01		
Program	GWPP			WRRP			WRRP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.7	0.89	0.71	0.7	<MDA	.	1.59
Gross Beta	<MDA	.	5.6	1.61	0.9	0.87	2.76	1.22	1.7
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	22.65	<MDA	.	13.3
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-735								
Location	EXP-J								
Date Sampled	05/08/01			11/01/01					
Program	GWPP			GWPP					
Type				DUP					
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.6	<MDA	.	7.5	<MDA	.	4.4
Gross Beta	<MDA	.	6	<MDA	.	8.1	<MDA	.	8.4
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-744						GW-747		
Location	GRIDK1						GRIDK2		
Date Sampled	05/07/01			10/31/01			05/07/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.4	<MDA	.	4	<MDA	.	2.4
Gross Beta	6.7	4.4	6.7	<MDA	.	6.1	<MDA	.	8.5
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-747			GW-750					
Location	GRIDK2			EXP-J					
Date Sampled	10/31/01			05/03/01			11/01/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	3.6	<MDA	.	3.2	<MDA	.	5.5
Gross Beta	<MDA	.	6.4	<MDA	.	8.7	<MDA	.	7.4
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	.	.	.	.	.	.
Uranium-235	.	.	.	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	.	.	.	.	.	.	.	.	.

Sampling Point	GW-771						GW-772		
Location	GRIDC1						GRIDC1		
Date Sampled	05/22/01			11/05/01			05/22/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	1.2	1.2	0.79	<MDA	.	4.4	<MDA	.	3.4
Gross Beta	<MDA	.	7.1	<MDA	.	7.6	<MDA	.	7.2
Radium-223/224/226	<MDA	.	0.35	<MDA	.	0.39	0.23	0.17	0.21
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	<MDA	.	0.39	0.39	0.32	0.35	0.84	0.46	0.15
Thorium-234	<MDA	.	0.25	<MDA	.	0.18	<MDA	.	0.19
Uranium-234	<MDA	.	0.25	<MDA	.	0.23	<MDA	.	0.29
Uranium-235	<MDA	.	0.1	<MDA	.	0.093	<MDA	.	0.23
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	<MDA	.	0.25	<MDA	.	0.18	<MDA	.	0.19

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-772						GW-782		
Location	GRIDC1						GRIDE3		
Date Sampled	05/22/01			11/06/01			04/18/01		
Program	GWPP			GWPP			GWPP		
Type	DUP								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.2	<MDA	.	4.7	64	8.8	2.7
Gross Beta	<MDA	.	8.2	<MDA	.	8.9	13	4.9	6.7
Radium-223/224/226	0.42	0.19	0.19	0.45	0.27	0.3	<MDA	.	2.5
Technetium-99	<MDA	.	13	<MDA	.	13	.	.	.
Thorium-230	0.16	0.16	0.11	0.31	0.2	0.083	0.14	0.14	0.094
Thorium-234	<MDA	.	0.2	0.28	0.16	0.14	0.56	0.27	0.23
Uranium-234	<MDA	.	0.34	<MDA	.	0.33	57	6.5	0.27
Uranium-235	<MDA	.	0.1	<MDA	.	0.091	0.53	0.28	0.096
Uranium-236	.	.	.	<MDA	.	0.28	0.56	0.27	.
Uranium-238	<MDA	.	0.2	<MDA	.	0.28	0.56	0.27	0.23

Sampling Point	GW-782								
Location	GRIDE3								
Date Sampled	04/18/01			09/05/01		10/16/01			
Program	GWPP			GWPP		GWPP			
Type	DUP								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	56	8.2	3.4	<MDA	.	51	41	7.2	3.6
Gross Beta	7.6	4.7	7.2	<MDA	.	89	13	5.6	8
Radium-223/224/226	<MDA	.	1.9	.	.	.	<MDA	.	0.99
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	<MDA	.	0.32	.	.	.	0.38	0.24	0.28
Thorium-234	0.52	0.24	0.17	.	.	.	0.38	0.23	0.21
Uranium-234	52	5.7	0.31	41	4.8	0.23	36	4.4	0.36
Uranium-235	0.37	0.24	0.26	<MDA	.	0.96	0.36	0.26	0.26
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	0.52	0.24	0.17	0.28	0.18	0.077	0.38	0.23	0.21

Sampling Point	GW-784						GW-785		
Location	GRIDD1						GRIDD1		
Date Sampled	05/21/01			11/07/01			05/21/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.7	<MDA	.	5.3	1.4	1.2	0.74
Gross Beta	<MDA	.	8.7	<MDA	.	6.9	15	4.8	6.3
Radium-223/224/226	<MDA	.	0.27	0.3	0.22	0.27	<MDA	.	0.29
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	<MDA	.	0.33	<MDA	.	0.34	<MDA	.	0.34
Thorium-234	<MDA	.	0.26	<MDA	.	0.25	<MDA	.	0.18
Uranium-234	0.37	0.22	0.23	<MDA	.	0.32	<MDA	.	0.26
Uranium-235	<MDA	.	0.093	<MDA	.	0.31	<MDA	.	0.094
Uranium-236	.	.	.	<MDA	.	.	<MDA	.	.
Uranium-238	<MDA	.	0.26	<MDA	.	0.25	<MDA	.	0.18

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	GW-785			GW-816					
Location	GRIDD1			EXP-SR					
Date Sampled	11/07/01			05/03/01					
Program	GWPP			GWPP					
Type							DUP		
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	4.2	<MDA	.	5.3	5.1	3.4	1.5
Gross Beta	<MDA	.	6.6	<MDA	.	18	<MDA	.	16
Radium-223/224/226	0.24	0.2	0.11	.	.	.	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	<MDA	.	13
Thorium-230	<MDA	.	0.4	.	.	.	.	.	.
Thorium-234	<MDA	.	0.15	.	.	.	.	.	.
Uranium-234	<MDA	.	0.19	.	.	.	.	.	.
Uranium-235	<MDA	.	0.077	.	.	.	.	.	.
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	<MDA	.	0.15	.	.	.	.	.	.

Sampling Point	GW-816			GW-832					
Location	EXP-SR			NHP					
Date Sampled	10/31/01			01/11/01			07/30/01		
Program	GWPP			WRRP			WRRP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	2.9	<MDA	.	1.35	7.06	1.43	1.09
Gross Beta	7.5	3.9	5.7	3.18	1.42	1.84	6.23	1.48	1.35
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	<MDA	.	13	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	.	.	.	1.7	0.59	0.27	1.47	0.59	0.44
Uranium-235	.	.	.	<MDA	.	0.21	<MDA	.	0.31
Uranium-236	.	.	.	<MDA	.	0.19	<MDA	.	0.25
Uranium-238	.	.	.	1.54	0.56	0.29	4.28	1.18	0.35

Sampling Point	LRSPW						NPR07.0SW		
Location	EXP-SW						EXP-NPR		
Date Sampled	05/02/01			10/30/01			05/09/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	3.6	2.5	3.2	<MDA	.	4.5	<MDA	.	4.3
Gross Beta	<MDA	.	9.1	<MDA	.	6.9	<MDA	.	6.6
Radium-223/224/226	<MDA	.	1.8	<MDA	.	1.6	.	.	.
Technetium-99	<MDA	.	13	<MDA	.	13	.	.	.
Thorium-230	0.31	0.24	0.12	0.37	0.25	0.24	.	.	.
Thorium-234	1.8	0.44	0.2	1.7	0.51	0.21	.	.	.
Uranium-234	0.84	0.29	0.2	1	0.42	0.39	<MDA	.	0.24
Uranium-235	0.11	0.11	0.073	<MDA	.	0.11	<MDA	.	0.097
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	1.8	0.44	0.2	1.7	0.51	0.21	<MDA	.	0.27

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME
Radiological Analytes: Isotope Activity

Sampling Point	NPR07.0SW						NPR12.0SW		
Location	EXP-NPR						EXP-NPR		
Date Sampled	05/09/01			11/27/01			05/09/01		
Program	GWPP			GWPP			GWPP		
Type	DUP								
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	<MDA	.	4.7	<MDA	.	3.2	<MDA	.	3.9
Gross Beta	<MDA	.	5.5	10	5.3	8	<MDA	.	6.1
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	<MDA	.	0.27	<MDA	.	0.45	<MDA	.	0.31
Uranium-235	<MDA	.	0.098	<MDA	.	0.16	<MDA	.	0.091
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	<MDA	.	0.19	<MDA	.	0.13	<MDA	.	0.18

Sampling Point	NPR12.0SW			NPR23.0SW					
Location	EXP-NPR			EXP-NPR					
Date Sampled	11/27/01			05/09/01			11/27/01		
Program	GWPP			GWPP			GWPP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	3.5	2.3	2.6	<MDA	.	3.3	<MDA	.	2.7
Gross Beta	<MDA	.	10	<MDA	.	6.2	<MDA	.	9.5
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	0.24	0.22	0.13	<MDA	.	0.35	<MDA	.	0.33
Uranium-235	<MDA	.	0.16	<MDA	.	0.11	<MDA	.	0.17
Uranium-236	.	.	.	.	.	.	.	.	.
Uranium-238	<MDA	.	0.13	<MDA	.	0.41	<MDA	.	0.13

Sampling Point	OF 51						STATION 8		
Location	EXP-SW						EXP-SW		
Date Sampled	02/27/01			08/28/01			02/14/01		
Program	WRRP			WRRP			WRRP		
Type									
Result (pCi/L)	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	1.96	1.37	1.89	3.96	1.53	1.55	16.92	2.54	0.82
Gross Beta	3.93	1.38	1.87	2.83	1.37	1.92	10.67	1.57	1.7
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	1.96	0.66	0.23	2.16	0.66	0.19	7.13	1.64	0.3
Uranium-235	<MDA	.	0.22	<MDA	.	0.24	<MDA	.	0.38
Uranium-236	<MDA	.	0.2	<MDA	.	0.16	0.25	0.21	0.11
Uranium-238	2.46	0.77	0.23	2.86	0.79	0.19	14.74	3.01	0.2

APPENDIX E.3: CY 2001 MONITORING DATA FOR THE UPPER EAST FORK POPLAR CREEK HYDROGEOLOGIC REGIME

Radiological Analytes: Isotope Activity

Sampling Point	STATION 8								
Location	EXP-SW								
Date Sampled	02/27/01			08/28/01			09/04/01		
Program	WRRP			WRRP			WRRP		
Type									
	Activity	Error	MDA	Activity	Error	MDA	Activity	Error	MDA
Gross Alpha	13.26	2.26	1.7	3.91	1.6	1.67	8.64	1.96	1.55
Gross Beta	9.32	1.59	1.83	4.26	1.46	1.95	6.42	1.5	1.86
Radium-223/224/226	.	.	.	.	.	.	.	.	.
Technetium-99	.	.	.	.	.	.	.	.	.
Thorium-230	.	.	.	.	.	.	.	.	.
Thorium-234	.	.	.	.	.	.	.	.	.
Uranium-234	2.46	0.73	0.3	0.99	0.43	0.27	3.39	0.92	0.25
Uranium-235	<MDA	.	0.26	<MDA	.	0.25	0.38	0.27	0.24
Uranium-236	<MDA	.	0.24	<MDA	.	0.25	<MDA	.	0.24
Uranium-238	8.28	1.8	0.26	1.19	0.48	0.3	5.08	1.23	0.23

APPENDIX F

**CY 2001 MONITORING DATA FOR THE
CHESTNUT RIDGE HYDROGEOLOGIC REGIME**

EXPLANATION

Sampling Point:

GW - Groundwater monitoring well (also 1090)
MCK - McCoy Branch Kilometer
OF-301 - Outfall 301: surface water station located where water exits Kerr Hollow Quarry
SCR - South Chestnut Ridge (tributary prefix for spring and surface water sampling locations)

Location:

CDLVI - Construction/Demolition Landfill VI
CDLVII - Construction/Demolition Landfill VII
CRBAWP - Chestnut Ridge Borrow Area Waste Pile
CRSDB - Chestnut Ridge Sediment Disposal Basin
CRSP - Chestnut Ridge Security Pits
EXP-SW - Exit Pathway (spring or surface water sampling location)
FCAP - Filled Coal Ash Pond
KHQ - Kerr Hollow Quarry
LII - Industrial Landfill II
LIV - Industrial Landfill IV
LV - Industrial Landfill V
UNCS - United Nuclear Corporation Site

Monitoring Program:

GWPP - Y-12 Groundwater Protection Program
WRRP - Water Resources Restoration Program

Sample Type:

Dup - Field Duplicate Sample
ACT - Activity
Error - Counting Error (two standard deviations)
MDA - Minimum Detectable Activity

Units:

ft - feet (elevations are above mean sea level and depths are below grade)
 $\mu\text{g/L}$ - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
 $\mu\text{mho}/\text{cm}$ - micromhos per centimeter
NTU - Nephelometric Turbidity Units
pCi/L - picoCuries per liter
ppm - parts per million

EXPLANATION (continued)

NOTES:

Only the analytes that were detected above the program reporting limits in at least one sample are included in this appendix. Additionally, results that are below the reporting limits are replaced with values (e.g., “<”) to emphasize the detected results. The following sections describe the analytes, reporting limits, and data qualifiers for each subsection of the appendix. A comprehensive list of the GWPP analytes, analytical methods, and reporting limits is provided in Appendix B, Table B.5.

F.1 Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals:

All analytes are included in this appendix except the trace metals that were not detected in any sample at a level above the reporting limits shown in the following summary. Results for the trace metals shown in bold typeface are presented in Appendix F.1.

Analyte	Reporting Limit (mg/L)		Analyte	Reporting Limit (mg/L)	
	GWPP	WRRP		GWPP	WRRP
Cations			Anions		
Calcium	0.2	0.25	Alkalinity - HCO ₃	1.0	NA
Magnesium	0.2	0.05	Alkalinity - CO ₃	1.0	NA
Potassium	2.0	0.25	Chloride	0.2	0.1
Sodium	0.2	0.25	Fluoride	0.1	0.05
			Nitrate (as Nitrogen)	0.028	0.1
			Sulfate	0.25	0.1
Trace Metals			Trace Metals (continued)		
Aluminum	0.2	0.05	Lithium	0.01	0.01
Antimony (PMS)	0.0025	.	Manganese	0.005	0.005
Antimony	.	0.006	Mercury (CVAA)	0.0002	0.0002
Arsenic (PMS)	0.005	.	Molybdenum	0.05	.
Arsenic	.	0.005	Nickel (PMS)	0.005	.
Barium	0.004	0.005	Nickel	0.05	0.01
Beryllium	0.001	0.001	Selenium (PMS)	0.01	.
Boron	0.1	0.01	Selenium	.	0.005
Cadmium (PMS)	0.0005	.	Silver	0.02	0.005
Cadmium	.	0.001	Strontium	0.005	0.005
Chromium (PMS)	0.0025	.	Thallium (PMS)	0.0005	.
Chromium	0.02	0.005	Thallium	.	0.002
Cobalt	0.02	0.005	Thorium	0.2	.
Copper	0.02	0.005	Uranium (PMS)	0.0005	.
Iron	0.05	0.01	Uranium (KPA)	.	0.004
Lead (PMS)	0.0005	.	Vanadium	0.02	0.01
Lead	.	0.003	Zinc	0.05	0.01

Metals analyses were performed using the inductively coupled plasma spectroscopy method unless otherwise noted:

- CVAA - Cold Vapor Atomic Absorption (EPA-7470)
- KPA - Kinetic Phosphorescent Analysis (ASTM-D5174-M)
- PMS - Plasma Mass Spectroscopy (EPA-200.8)

EXPLANATION (continued)

The following symbols and data qualifiers are used in Appendix F.1:

- . - Not analyzed or not applicable
- < - Analyzed but not detected at the project reporting level
- J - Positively identified; estimated concentration (WRRP data for landfills)
- R - Unusable result: the field measurement for conductivity was more than an order of magnitude greater than the laboratory result and the calculated value (two spring samples).

F.2 Volatile Organic Compounds:

Results for the compounds shown in bold typeface are included in this appendix. The other compounds were never detected at levels above the following reporting limits, in micrograms per liter ($\mu\text{g/L}$).

Volatile Organic Compound	Reporting Limit		Volatile Organic Compound	Reporting Limit	
	GWPP	WRRP		GWPP	WRRP
Acetone	10	10	1,1-Dichloroethene	5	5
Acrolein	10	*20	cis-1,2-Dichloroethene	5	5
Acrylonitrile	5	*20	trans-1,2-Dichloroethene	5	5
Benzene	5	5	1,2-Dichloropropane	5	5
Bromochloromethane	5	*1	cis-1,3-Dichloropropene	5	5
Bromodichloromethane	5	5	trans-1,3-Dichloropropene	5	5
Bromoform	5	5	Dimethylbenzene	5	5
Bromomethane	5	10	Ethanol	200	*200
2-Butanone	5	10	Ethylbenzene	5	5
Carbon disulfide	5	5	Ethyl methacrylate	5	*1
Carbon tetrachloride	5	5	2-Hexanone	5	10
Chlorobenzene	5	5	Iodomethane	5	*1
Chloroethane	5	10	4-Methyl-2-pentanone	5	10
2-Chloroethyl vinyl ether	10	*2	Methylene chloride	5	5
Chloroform	5	5	Styrene	5	5
Chloromethane	5	10	1,1,1,2-Tetrachloroethane	5	*1
Dibromochloromethane	5	5	1,1,2,2-Tetrachloroethane	5	5
1,2-Dibromo-3-chloropropane	10	*2	Tetrachloroethene	5	5
1,2-Dibromoethane	5	*1	Toluene	5	5
Dibromomethane	5	*1	1,1,1-Trichloroethane	5	5
1,2-Dichlorobenzene	5	*1	1,1,2-Trichloroethane	5	5
1,4-Dichlorobenzene	5	*1	Trichloroethene	5	5
1,4-Dichloro-2-butene	5	*1	Trichlorofluoromethane	5	*2
trans-1,4-Dichloro-2-butene	5	*1	1,2,3-Trichloropropane	10	*1
Dichlorodifluoromethane	5	.	Vinyl acetate	10	*2
1,1-Dichloroethane	5	5	Vinyl chloride	2	2
1,2-Dichloroethane	5	5			

Note: * = Compound is not listed in the WRRP sampling and analysis plans for FY 2001 (BJC 2000) or FY 2002 (BJC 2001) but is reported for SWDF monitoring purposes (see Section 2.3).

EXPLANATION (continued)

Because concentrations of chloroform, chloromethane, trans-1,2-dichloroethene, and toluene were rarely detected (at very low estimated concentrations) during CY 2001, results for these compounds (shown below) are not presented in Appendix F.2.

Well Number	Location	Date Sampled	Compound	Result ($\mu\text{g/L}$)
GW-305	LIV	07/16/01	Chloromethane	1.2 J
GW-544	CDLVI	01/24/01	Chloroform	0.88 J
GW-544	CDLVI	07/23/01	Chloroform	0.77 J
GW-564	CDLVII	11/01/01	Chloroform	0.44 J
GW-796	CDLVII	01/18/01	Toluene	0.5 J
GW-797	LV	07/23/01	Chloromethane	0.41 J
GW-798	CDLVII	05/21/01	trans-1,2-Dichloroethene	0.34 J
GW-798	CDLVII	07/25/01	Chloromethane	0.35 J

The following symbols and data qualifiers are used in Appendix F.2.

- . - Not analyzed or not applicable
- < - Analyzed but not detected at the project reporting level (also false-positive results for data provided by the WRRP)
- J - Positively identified; estimated concentration

F.3 Radiological Analytes:

The following summary shows the radiological analytes reported for at least one groundwater sample collected during CY 2001 in the Chestnut Ridge Regime.

Analyte	No. of Results	No. Detected		Analyte	No. of Results	No. Detected	
		GWPP	WRRP			GWPP	WRRP
Gross Alpha	155	1	40	Thorium-228	51	.	0
Gross Beta	155	3	62	Thorium-230	51	.	11
Strontium-89/90	14	.	0	Thorium-232	51	.	1
Technetium-99	2	.	0				

Only the results for gross alpha and gross beta are presented in Appendix F.3, and the following notes apply to this appendix:

- Result - Activity in picoCuries per liter (pCi/L)
- Error - Counting error (two standard deviations)
- MDA - Minimum detectable activity
- Q - Suspected artifact; elevated activity unsupported by other results for that location.
- R - Unusable result: duplicate results differ by more than an order of magnitude

EXPLANATION (continued)

The CY 2001 isotopic results that exceed the MDAs are shown below:

Well Number	Location	Date Sampled	Isotope	Activity (pCi/L)		
				Result	Error	MDA
GW-305	LIV	01/17/01	Thorium-230	0.21	0.16	0.16
GW-305	LIV	05/03/01	Thorium-232	0.28	0.25	0.23
GW-305	LIV	05/03/01	Thorium-230	1.27	0.6	0.33
GW-542	CDLVI	01/23/01	Thorium-230	0.2	0.17	0.16
GW-544	CDLVI	01/24/01	Thorium-230	0.33	0.23	0.28
GW-560	CDLVII	05/21/01	Thorium-230	0.69	0.37	0.31
GW-562	CDLVII	05/21/01	Thorium-230	0.63	0.32	0.16
GW-709	LII	01/22/01	Thorium-230	0.26	0.2	0.16
GW-797	LV	01/16/01	Thorium-230	0.21	0.19	0.18
GW-798	CDLVII	05/21/01	Thorium-230	0.49	0.33	0.3
GW-799	LV	01/16/01	Thorium-230	0.23	0.19	0.14
GW-827	CDLVII	01/24/01	Thorium-230	0.22	0.16	0.14

APPENDIX F.1

FIELD MEASUREMENTS, MISCELLANEOUS ANALYTES, MAJOR IONS, AND TRACE METALS

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	1090		GW-141		GW-142				
Site	UNCS		LIV		KHQ				
Date	01/30/01	07/26/01	01/23/01	07/17/01	04/09/01	04/10/01	04/11/01	04/12/01	10/08/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	9:15	10:40	9:50	9:40	9:35	9:55	9:55	9:30	10:05
Measuring Point Elev. (ft)	1104.48	1104.48	1186.23	1186.23	971.15	971.15	971.15	971.15	971.15
Depth to Water (ft)	52.90	60.41	95.85	99.20	137.95	138.14	138.34	138.37	138.35
Groundwater Elevation (ft)	1051.58	1044.07	1090.38	1087.03	833.20	833.01	832.81	832.78	832.80
Conductivity ($\mu\text{mho}/\text{cm}$)	540	542	369	413	383	402	388	391	430
Dissolved Oxygen (ppm)	2.39	4.03	10.02	4.69	10.05	5.21	5.03	7.8	2.2
Oxidation/Reduction (mV)	223	164	184	151	-47	170	175	217	137
Temperature (degrees C)	14.3	18.4	13.1	20.2	15.9	18.6	17.4	17.6	13.7
Turbidity (NTU)	21	9	7	20	48	52	36	47	160
pH	6.53	7.22	7.02	6.87	8.51	7.87	8.06	7.98	7.48
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)			371						
Dissolved Solids (mg/L)	301	307	207	211	215	217	201	186	140
Suspended Solids (mg/L)	<	5	<	<	5.3	5.7	5.1	<	8.1
Turbidity (NTU)			5.4						
pH			7.5	7.4					
MAJOR IONS (mg/L)									
Calcium	54.1	54.8	40.3	43.6	32.7	30.7	31.1	31.1	30.5
Magnesium	32.3	33.4	25.2	26.2	32.1	30.3	30.6	30.5	30.6
Potassium	0.976	1.04	<	<	4.41	4.27	4.35	4.34	4.26
Sodium	9.44	9.62	<	<	1.13	1.12	1.14	1.12	1.11
Alkalinity as CO ₃	<	<	<	<					
Alkalinity as HCO ₃	256	260	196	193					
Chloride	18.6	18.4	2.3 J	2.8 J					
Fluoride	<	<	0.1 J	<					
Nitrate as N	1.1	0.76	0.44 J	0.46 J					
Sulfate	3.6	4	2.8 J	2.3 J					
Charge Balance	0	0.6	2.1	5.8					
TRACE METALS (mg/L)									
Aluminum	<	<	0.19	0.12	<	<	<	<	0.0613
Arsenic	<	<	<	<	<	<	<	<	<
Barium	0.0277	0.029	0.015	0.016	0.445	0.425	0.427	0.428	0.408
Boron	<	<	<	<	0.0371	0.0364	0.0366	0.037	0.0347
Chromium (PMS)	.	.	.	.					.
Chromium	<	<	<	0.013	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	0.0106	0.0111	0.27	0.26	3.57	3.19	2.65	2.35	4.62
Lead (PMS)	.	.	.	.	0.0281	0.0278	0.0283	0.0283	0.0264
Lithium	<	<	.	.					.
Manganese	<	<	<	<	0.0653	0.0624	0.06	0.0607	0.0562
Molybdenum	.	.	.	<	<	<	<	<	.
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium	<	<	<	<	<	<	<	<	<
Strontium	0.0238	0.0247	0.014	0.015	0.354	0.344	0.347	0.346	0.336
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	0.025	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-143						GW-144					
Site	KHQ						KHQ					
Date	04/09/01		04/10/01		04/11/01		04/12/01	10/08/01	04/09/01	04/10/01	04/11/01	
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	
Sample Type	Dup											
FIELD MEASUREMENTS												
Time Sampled	13:05	.	13:00	12:35	10:55	13:35	13:25	14:20	12:55			
Measuring Point Elev. (ft)	913.98	.	913.98	913.98	913.98	913.98	913.54	913.54	913.54			
Depth to Water (ft)	81.20	.	81.81	81.79	81.90	81.73	81.29	81.32	81.35			
Groundwater Elevation (ft)	832.78	.	832.17	832.19	832.08	832.25	832.25	832.22	832.19			
Conductivity ($\mu\text{mho}/\text{cm}$)	486	.	493	494	491	494	337	341	336			
Dissolved Oxygen (ppm)	4.63	.	4.86	4.21	1.17	0.82	4.51	5.01	5.45			
Oxidation/Reduction (mV)	-135	.	-109	-88	-85	106	165	137	168			
Temperature (degrees C)	19.8	.	19.9	20.5	17.8	18.9	17	16.8	16.9			
Turbidity (NTU)	25	.	25	21	17	14	21	26	3			
pH	8.33	.	7.85	7.76	8.08	7.88	7.28	7.68	7.28			
MISCELLANEOUS												
Conductivity ($\mu\text{mho}/\text{cm}$)	.		.	.	.	.	.	.	.
Dissolved Solids (mg/L)	276	280	270	286	281	262	200	180	199			
Suspended Solids (mg/L)	<	<	<	<	<	<	8.5	<	<			
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)												
Calcium	32.2	30.4	30.4	29.6	30.2	31	45.7	44	43.4			
Magnesium	26.6	25.1	25.2	24.4	24.8	25.8	16.4	16.2	15.9			
Potassium	19.2	17.9	18.1	17.6	18	18.2	1.51	1.52	1.47			
Sodium	21.6	20.2	20.4	19.7	20	20.7	1.01	1.03	1			
Alkalinity as CO_3	.	.	.	.	.	.	.	.	.
Alkalinity as HCO_3	.	.	.	.	.	.	.	.	.
Chloride	.	.	.	.	.	.	.	.	.
Fluoride	.	.	.	.	.	.	.	.	.
Nitrate as N	.	.	.	.	.	.	.	.	.
Sulfate	.	.	.	.	.	.	.	.	.
Charge Balance	.	.	.	.	.	.	.	.	.
TRACE METALS (mg/L)												
Aluminum	<	<	<	<	<	0.158	<	<	<			
Arsenic	<	<	<	<	<	<	<	<	<			
Barium	0.0473	0.0436	0.0452	0.0437	0.0444	0.0451	0.0437	0.0447	0.0436			
Boron	0.906	0.855	0.871	0.846	0.87	0.845	0.0165	0.0147	0.0142			
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<	<			
Cobalt	<	<	<	<	<	<	<	<	<			
Copper	<	<	<	<	<	<	<	<	<			
Iron	0.686	0.646	0.511	0.527	0.521	0.758	<	<	<			
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lithium	0.339	0.314	0.336	0.324	0.334	0.317	0.0251	0.0253	0.0246			
Manganese	0.0124	0.0114	0.0115	0.0111	0.011	0.0122	<	<	<			
Molybdenum	<	<	<	<	<	.	<	<	<			
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<			
Selenium	<	<	<	<	<	<	<	<	<			
Strontium	3.01	2.82	2.89	2.8	2.85	2.96	0.0799	0.0797	0.0778			
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<			
Vanadium	<	<	<	<	<	<	<	<	<			
Zinc	<	<	<	<	<	<	<	<	<			

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-144			GW-145					GW-156
Site	KHQ			KHQ					CRSDB
Date	04/11/01	04/12/01	10/08/01	04/09/01	04/10/01	04/11/01	04/12/01	10/08/01	04/16/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup								
FIELD MEASUREMENTS									
Time Sampled	.	12:10	14:50	11:45	9:25	9:25	9:05	13:30	12:45
Measuring Point Elev. (ft)	.	913.54	913.54	840.24	840.24	840.24	840.24	840.24	1049.30
Depth to Water (ft)	.	81.40	81.70	7.01	7.34	7.34	7.39	7.62	143.35
Groundwater Elevation (ft)	.	832.14	831.84	833.23	832.90	832.90	832.85	832.62	905.95
Conductivity ($\mu\text{mho}/\text{cm}$)	.	333	369	524	596	546	548	530	684
Dissolved Oxygen (ppm)	.	5.32	4.25	4.79	7.21	7.84	5.8	3.55	8.03
Oxidation/Reduction (mV)	.	217	193	199	223	210	226	233	200
Temperature (degrees C)	.	15.3	15.4	20.8	14.9	15.8	16.8	15.9	14.8
Turbidity (NTU)	.	17	10	16	9	8	11	17	17
pH	.	7.76	6.94	7.66	7.47	7.6	7.32	7.17	7.37
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	.	193	177	210	279	315	307	285	356
Dissolved Solids (mg/L)	.	<	<	<	<	<	<	<	414
Suspended Solids (mg/L)	.	.	.	.	.	.	.	.	.
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)									
Calcium	42.6	43	58.4	44.8	42.6	42.7	44.1	44.2	68
Magnesium	15.7	15.7	17.6	37.7	35.9	35.9	36.6	37.1	40.9
Potassium	1.45	1.47	1.75	13.1	12.5	12.7	12.9	12.8	20.6
Sodium	0.988	0.995	1.23	4.68	4.56	4.62	4.68	4.33	6.54
Alkalinity as CO_3	.	.	.	.	.	.	.	.	.
Alkalinity as HCO_3	.	.	.	.	.	.	.	.	.
Chloride	.	.	.	.	.	.	.	.	.
Fluoride	.	.	.	.	.	.	.	.	.
Nitrate as N	.	.	.	.	.	.	.	.	.
Sulfate	.	.	.	.	.	.	.	.	.
Charge Balance	.	.	.	.	.	.	.	.	.
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Arsenic	<	<	<	<	<	<	<	<	<
Barium	0.0429	0.0432	0.049	0.0872	0.0855	0.0857	0.0867	0.085	0.0348
Boron	0.0128	0.014	0.0205	0.248	0.237	0.238	0.245	0.232	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	<	<	0.0377	0.0295	0.0256	0.0251	0.0218	0.025	<
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lithium	0.0242	0.0245	0.0299	0.12	0.119	0.121	0.123	0.113	<
Manganese	<	<	<	0.0091	0.0069	0.0058	<	<	<
Molybdenum	<	<	<	.	<	<	.	.	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium	<	<	<	<	<	<	<	<	<
Strontium	0.0764	0.0768	0.117	7.19	6.72	6.73	6.83	7.04	0.0263
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	0.0146	0.015	0.0147	0.0123	0.0135	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	0.0109	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-156						GW-159		
Site	CRSDB						CRSDB		
Date	04/17/01	04/18/01	04/19/01		10/09/01		04/16/01	04/17/01	04/18/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type			Dup		Dup				
FIELD MEASUREMENTS									
Time Sampled	12:25	12:25	12:35	.	13:40	.	9:35	9:45	10:05
Measuring Point Elev. (ft)	1049.30	1049.30	1049.30	.	1049.30	.	1051.40	1051.40	1051.40
Depth to Water (ft)	143.30	143.30	143.32	.	143.78	.	117.40	117.73	118.50
Groundwater Elevation (ft)	906.00	906.00	905.98	.	905.52	.	934.00	933.67	932.90
Conductivity ($\mu\text{mho}/\text{cm}$)	680	666	653	.	675	.	404	413	397
Dissolved Oxygen (ppm)	8.48	5.95	7.47	.	4.69	.	7.9	6.91	6.42
Oxidation/Reduction (mV)	240	189	212	.	197	.	214	230	232
Temperature (degrees C)	10.1	12	14	.	16.1	.	13.7	9.8	12.4
Turbidity (NTU)	19	17	13	.	12	.	18	16	16
pH	7.36	7.37	7.52	.	7.02	.	7.74	7.75	7.83
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)									
Dissolved Solids (mg/L)	387	413	378	373	391	407	220	242	251
Suspended Solids (mg/L)	<	<	<	<	<	<	<	<	<
Turbidity (NTU)	.	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)									
Calcium	60.5	63.6	62.3	63.2	70.1	68.5	36.4	40.7	39.4
Magnesium	37.2	39.3	38.1	38.3	43.4	42.7	23.4	25.8	24.8
Potassium	16.2	15.5	13.8	13.6	13.9	14.1	1.58	1.67	1.52
Sodium	5.17	4.98	4.44	4.37	4.9	4.9	0.534	0.6	0.578
Alkalinity as CO ₃	.	.	.	.	.	.	.	.	.
Alkalinity as HCO ₃	.	.	.	.	.	.	.	.	.
Chloride	.	.	.	.	.	.	.	.	.
Fluoride	.	.	.	.	.	.	.	.	.
Nitrate as N	.	.	.	.	.	.	.	.	.
Sulfate	.	.	.	.	.	.	.	.	.
Charge Balance	.	.	.	.	.	.	.	.	.
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Arsenic	<	<	<	<	<	<	<	<	<
Barium	0.0285	0.0282	0.0259	0.0258	0.0295	0.0292	0.0129	0.0139	0.0131
Boron	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	<	<	<	<	0.0145	0.016	<	<	<
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lithium	<	<	<	<	<	<	<	<	<
Manganese	<	<	<	<	<	<	<	<	<
Molybdenum	<	<	<	<	<	.	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium	<	<	<	<	<	<	<	<	<
Strontium	0.0234	0.0243	0.0233	0.0233	0.0283	0.0279	0.0215	0.0227	0.0207
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	0.029	0.0278	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-159		GW-174		GW-175		GW-177		
Site	CRSDB		CRSP		CRSP		CRSP		
Date	04/19/01	10/09/01	03/20/01	08/21/01	03/20/01	08/20/01	03/26/01	07/25/01	
Program	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	WRRP
Sample Type							Dup		
FIELD MEASUREMENTS									
Time Sampled	9:25	10:50	13:30	9:40	10:00	9:10	10:05		12:40
Measuring Point Elev. (ft)	1051.40	1051.40	1116.50	1116.50	1084.00	1084.00	1158.20		1158.20
Depth to Water (ft)	118.50	118.80	108.72	119.79	116.69	125.00	117.58		120.18
Groundwater Elevation (ft)	932.90	932.60	1007.78	996.71	967.31	959.00	1040.62		1038.02
Conductivity ($\mu\text{mho}/\text{cm}$)	390	390	542	481	564	499	540		450
Dissolved Oxygen (ppm)	6.96	4.75	3.93	2.53	5.79	2.28	4.61		6.88
Oxidation/Reduction (mV)	237	145	158	111	167	180	159		137
Temperature (degrees C)	12.3	17.8	9.6	18.8	11.7	16.6	13.3		20.8
Turbidity (NTU)	15	14							27
pH	7.86	7.67	8	7.71	7.43	7.47	7.85		7.47
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)			450	461	470	459	436	432	
Dissolved Solids (mg/L)	245	230	218	258	227	257	234	239	264
Suspended Solids (mg/L)	<	5.2	6	<	<	<	<	<	<
Turbidity (NTU)			6.01	1.45	0.956	0.779	1.14	1.16	
pH			8.12	7.96	7.77	7.98	7.79	7.7	
MAJOR IONS (mg/L)									
Calcium	39.4	41.8	43.3	44.7	54	52.7	49	49	45.9
Magnesium	24.6	25.9	29.4	29	31.3	31.4	27.8	27.8	28.5
Potassium	1.44	1.23	2.26	<	<	<	2.42	2.52	5.43
Sodium	0.571	0.571	8.7	7.74	0.971	1.26	1.08	1.08	1.63
Alkalinity as CO ₃			<	<	<	<	<	<	
Alkalinity as HCO ₃			218	230	244	268	226	226	
Chloride			12.2	12.7	2.4	2	2.03	2.46	
Fluoride			<	<	<	<	<	<	
Nitrate as N			0.667	0.643	0.281	0.28	0.227	0.222	
Sulfate			3.31	3.22	0.868	0.761	8.08	7.8	
Charge Balance			2	-1.1	3.2	-1.7	0.9	0.8	
TRACE METALS (mg/L)									
Aluminum	<	<	0.344	<	<	<	<	<	<
Arsenic	<	<							<
Barium	0.0128	0.013	0.0376	0.0328	0.0409	0.0516	0.0189	0.0189	0.0199
Boron	<	<	<	<	<	<	<	<	<
Chromium (PMS)			0.0188	0.00578	0.00441	0.00684	0.0167	0.0167	
Chromium	<	<							0.0392
Cobalt	<	<							<
Copper	<	<	<	<	<	<	<	<	<
Iron	<	0.015	0.497	0.0892	<	<	<	<	0.043
Lead (PMS)			0.00191	<	<	<	<	<	
Lithium	<	<	<	<	<	<	<	<	<
Manganese	<	<	0.00663	<	<	<	<	<	<
Molybdenum	<								
Nickel (PMS)			0.0227	0.00562	<	<	0.00609	0.00595	
Nickel	<	<							<
Selenium	<	<							<
Strontium	0.0195	0.0196	0.061	0.0528	0.0155	0.0161	0.0182	0.018	0.0168
Uranium (PMS)			<	<	<	<	0.00226	0.00224	
Uranium (KPA)	<	<							<
Vanadium	<	<							<
Zinc	<	<							0.0324

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-180			GW-203		GW-205		GW-217	
Site	CRSP			UNCS		UNCS		LIV	
Date	03/21/01	08/21/01		01/30/01	07/26/01	01/30/01	07/26/01	01/22/01	07/17/01
Program	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type			Dup						
FIELD MEASUREMENTS									
Time Sampled	10:15	10:45	.	10:30	9:25	9:20	9:15	11:30	13:15
Measuring Point Elev. (ft)	1103.97	1103.97	.	1105.45	1105.45	1104.14	1104.14	1177.06	1177.06
Depth to Water (ft)	103.37	124.38	.	85.97	85.00	82.17	82.13	113.12	117.40
Groundwater Elevation (ft)	1000.60	979.59	.	1019.48	1020.45	1021.97	1022.01	1063.94	1059.66
Conductivity ($\mu\text{mho}/\text{cm}$)	564	482	.	301	320	402	413	350	365
Dissolved Oxygen (ppm)	6.91	3.08	.	5.53	3.01	6.85	3.06	7.71	4.36
Oxidation/Reduction (mV)	197	155	.	204	135	75	175	147	101
Temperature (degrees C)	12.7	16.9	.	13.1	18.4	13.4	18.9	10.7	20
Turbidity (NTU)	.	.	.	23	16	13	13	.	14
pH	7.24	7.17	.	7.24	7.58	10.17	10.18	7.84	8.02
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	507	475	478	.	.	.	.	328	.
Dissolved Solids (mg/L)	249	261	259	173	193	234	318	201	204
Suspended Solids (mg/L)	<	<	<	<	<	<	6.9	<	<
Turbidity (NTU)	0.901	0.342	0.351	.	.	.	.	0.075 J	.
pH	7.56	7.34	7.35	.	.	.	.	8.1	8.2
MAJOR IONS (mg/L)									
Calcium	56.8	53.4	56.4	33.2	33.7	1.39	1.41	33.9	35
Magnesium	34.7	31.6	32.7	19	19.4	8.22	8.88	21.7	21.5
Potassium	<	<	<	0.782	0.85	79.8	79.4	<	<
Sodium	0.771	0.619	0.628	0.537	0.576	12.3	12.4	7.4	<
Alkalinity as CO ₃	<	<	<	<	<	100	104	<	2.8 J
Alkalinity as HCO ₃	264	268	258	152	164	62	72	172	175
Chloride	2.55	2.11	1.96	2.4	2.2	2.3	2.3	2.6 J	2.9 J
Fluoride	<	<	<	<	<	<	<	0.11 J	0.19 J
Nitrate as N	0.261	0.226	0.216	0.82	0.51	0.32	0.064	0.42 J	0.42 J
Sulfate	0.899	0.779	0.831	1.6	1.6	1.8	2.3	8.3	5.9
Charge Balance	3	-1.5	2.7	1	-1.3	-2.8	-5.8	2.5	-1.5
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Arsenic	.	.	.	<	<	<	<	<	<
Barium	0.0227	0.0219	0.0224	0.0112	0.0117	<	<	0.03	0.03
Boron	<	<	<	<	<	<	<	<	<
Chromium (PMS)	<	<	<	.	.	.	.	.	.
Chromium	.	.	.	<	<	<	<	<	<
Cobalt	.	.	.	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	<	<	<	<	<	<	<	<	<
Lead (PMS)	<	<	<	.	.	.	.	.	.
Lithium	<	<	<	<	<	<	0.14	.	.
Manganese	<	<	<	<	<	<	<	<	<
Molybdenum	.	.	.	.	.	.	.	0.0021	<
Nickel (PMS)	<	<	<	.	.	.	.	.	.
Nickel	.	.	.	<	<	<	<	<	<
Selenium	.	.	.	<	<	<	<	<	<
Strontium	0.0176	0.0158	0.0162	0.0103	0.011	<	<	0.015	0.016
Uranium (PMS)	<	<	<	.	.	.	.	.	.
Uranium (KPA)	.	.	.	<	<	<	<	<	<
Vanadium	.	.	.	<	<	<	<	<	<
Zinc	.	.	.	<	<	<	<	0.021	0.022

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-221			GW-231						GW-241	
Site	UNCS			KHQ						CRSDB	
Date	01/30/01	07/26/01	04/09/01	04/10/01	04/11/01	04/12/01	10/08/01		03/22/01	08/16/01	
Program	WRRP	WRRP	GWPP	GWPP							
Sample Type							Dup				
FIELD MEASUREMENTS											
Time Sampled	14:10	10:50	9:35	13:35	11:50	10:25	10:00	.	8:55	9:45	
Measuring Point Elev. (ft)	1106.16	1106.16	849.67	849.67	849.67	849.67	849.67	.	982.64	982.64	
Depth to Water (ft)	87.70	86.45	16.42	16.52	16.53	16.57	16.99	.	48.43	54.81	
Groundwater Elevation (ft)	1018.46	1019.71	833.25	833.15	833.14	833.10	832.68	.	934.21	927.83	
Conductivity ($\mu\text{mho}/\text{cm}$)	278	294	285	296	293	294	384	.	324	305	
Dissolved Oxygen (ppm)	5.04	4.25	4.29	8.58	5.03	5.64	0.71	.	5.12	2.47	
Oxidation/Reduction (mV)	198	79	219	145	174	211	258	.	173	219	
Temperature (degrees C)	15.6	18.9	13.5	15.9	14	13.5	15.3	.	13.6	15.5	
Turbidity (NTU)	26	17	12	17	13	9	9	.			
pH	8	7.63	7.22	6.5	6.73	7.3	6.42	.	7.73	7.42	
MISCELLANEOUS											
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	.	.	296	287
Dissolved Solids (mg/L)	142	202	151	167	166	143	260	192	147	167	
Suspended Solids (mg/L)	<	<	<	<	<	<	<	<	2	<	
Turbidity (NTU)	.	.	.	.	.	.	.	.	7.68	2.29
pH	.	.	.	.	.	.	.	.	7.84	7.89
MAJOR IONS (mg/L)											
Calcium	29.9	30.5	32.8	31.5	33.1	32.8	47.5	47.1	33	32.2	
Magnesium	18.1	18.5	16.8	16.4	17.1	16.9	24.2	24.2	19.4	19.6	
Potassium	0.888	0.949	1.14	2.03	3.21	3.73	2.53	2.39	<	2.18	
Sodium	0.444	0.476	0.801	0.851	0.957	0.982	1.04	1	0.711	0.636	
Alkalinity as CO ₃	<	<	.	.	.	.	.	.	<	<
Alkalinity as HCO ₃	134	144	.	.	.	.	.	.	152	157
Chloride	1.4	1.4	.	.	.	.	.	.	0.791	0.704
Fluoride	<	<	.	.	.	.	.	.	<	<
Nitrate as N	0.91	0.62	.	.	.	.	.	.	0.0417	0.0384
Sulfate	1.2	1.3	.	.	.	.	.	.	2.06	1.29
Charge Balance	3.7	1.6	.	.	.	.	.	.	2.6	1.8
TRACE METALS (mg/L)											
Aluminum	<	<	<	<	<	<	<	<	0.262	<	
Arsenic	<	<	<	<	<	<	<	<	.	.	
Barium	0.0071	0.0075	0.0447	0.0456	0.0488	0.0479	0.0851	0.0891	0.0171	0.017	
Boron	<	<	<	<	<	<	<	<	<	<	
Chromium (PMS)	.	.	.	.	.	.	.	.	<	<
Chromium	<	<	<	<	<	<	<	<	.	.	
Cobalt	<	<	<	<	<	<	<	<	.	.	
Copper	<	<	<	<	<	<	<	<	<	<	
Iron	<	<	0.0187	<	<	<	0.0148	0.0103	0.379	0.0848	
Lead (PMS)	.	.	.	.	.	.	.	.	0.00111	<
Lithium	<	<	<	<	<	<	<	<	<	<	
Manganese	<	<	<	<	<	<	0.0052	0.0052	0.0151	<	
Molybdenum	.	.	<	<	<	<	.	.	.	.
Nickel (PMS)	.	.	.	.	.	.	.	.	0.00596	<
Nickel	<	<	<	<	<	<	<	<	.	.	
Selenium	<	<	<	<	<	<	<	<	.	.	
Strontium	0.0087	0.0091	0.0287	0.0286	0.03	0.0295	0.0425	0.0433	0.0184	0.0182	
Uranium (PMS)	.	.	.	.	.	.	.	.	<	<
Uranium (KPA)	<	<	<	<	<	<	<	<	.	.	
Vanadium	<	<	<	<	<	<	<	<	.	.	
Zinc	<	<	<	<	<	<	<	<	.	.	

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-301				GW-302		GW-305			
Site	CRBAWP				UNCS		LIV			
Date	01/09/01		07/11/01		01/31/01	07/26/01	01/17/01	05/03/01	07/16/01	11/07/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup		Dup							
FIELD MEASUREMENTS										
Time Sampled	14:00	.	10:15	.	16:10	13:20	13:00	10:45	10:05	10:20
Measuring Point Elev. (ft)	1086.55	.	1086.55	.	1141.84	1141.84	1183.75	1183.75	1183.75	1183.75
Depth to Water (ft)	137.03	.	136.11	.	102.90	107.20	128.25	123.58	128.15	128.55
Groundwater Elevation (ft)	949.52	.	950.44	.	1038.94	1034.64	1055.50	1060.17	1055.60	1055.20
Conductivity ($\mu\text{mho}/\text{cm}$)	363	.	363	.	495	545	318	305	361	382
Dissolved Oxygen (ppm)	7.38	.	4.98	.	6.75	2.85	7.9	3.77	7.95	3.99
Oxidation/Reduction (mV)	92	.	138	.	139	72	168	146	196	214
Temperature (degrees C)	9.8	.	19.8	.	14.8	19.8	10.4	16	16	12.7
Turbidity (NTU)	27	.	27	.	76	45	14	21	29	10
pH	8.15	.	7.67	.	7.67	7.22	8.08	8.61	7.09	7.61
MISCELLANEOUS										
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	298	.	.	.
Dissolved Solids (mg/L)	210	220	230	219	284	311	174	163	163	180
Suspended Solids (mg/L)	<	<	<	<	30.4	7.2	<	<	<	<
Turbidity (NTU)	.	.	.	.	.	.	0.15	.	.	.
pH	.	.	.	.	.	.	8.1	8.4	8.5	7.8
MAJOR IONS (mg/L)										
Calcium	38	31.6	43	43.3	50.8	50	30.7	23.5	22.3	29.7
Magnesium	25.6	21.3	27.2	27.4	31.2	31	19.7	19.5	18.5	18.6
Potassium	0.742	0.613	0.773	0.775	1.2	1.01	<	<	<	<
Sodium	1	0.86	0.94	0.944	13.2	11.7	<	<	6.1	<
Alkalinity as CO ₃	.	.	.	.	<	<	<	5.2	4.9 J	<
Alkalinity as HCO ₃	.	.	.	.	228	252	156	132	134	171
Chloride	.	.	.	.	34.4	27.2	3.4	2.8 J	3.2	6.4
Fluoride	.	.	.	.	0.12	<	0.09 J	<	<	<
Nitrate as N	.	.	.	.	1.2	0.92	0.44 J	0.52	0.53	0.42 J
Sulfate	.	.	.	.	3.9	3.5	1.8 J	6	6.7	1.8 J
Charge Balance	.	.	.	.	0.1	-3.1	-1	-2.3	-0.8	-8.9
TRACE METALS (mg/L)										
Aluminum	<	<	<	<	<	<	<	<	<	<
Arsenic	<	<	<	<	<	<	<	<	<	<
Barium	0.0227	0.0188	0.0226	0.0227	0.0269	0.0216	0.013	0.01	0.01	0.011
Boron	<	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	1.22	0.0342	<	<	<	<
Cobalt	<	<	<	<	0.0149	<	<	<	<	0.0013
Copper	<	<	<	<	0.0175	<	<	<	<	<
Iron	<	<	<	0.0103	8.57	0.847	<	<	<	<
Lead (PMS)	.	.	.	.	.	.	.	.	.	.
Lithium	<	<	<	<	<	<	.	.	.	.
Manganese	<	<	<	<	0.218	0.0153	0.01	<	<	0.01
Molybdenum	<	<	.	.	.	.	<	<	0.0039	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	0.454	0.119	0.46	0.12	0.12	0.49
Selenium	<	<	<	<	<	<	<	<	<	<
Strontium	0.0211	0.0175	0.0214	0.0214	0.0183	0.0176	0.018	0.015	0.016	0.019
Uranium (PMS)	.	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-339				GW-514		GW-521		GW-522	
Site	UNCS				FCAP		LIV		LIV	
Date	01/30/01		07/26/01		03/28/01	08/16/01	01/17/01	07/16/01	01/18/01	07/16/01
Program	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup		Dup							
FIELD MEASUREMENTS										
Time Sampled	13:00	.	12:40	.	10:00	8:35	9:55	10:05	13:10	13:55
Measuring Point Elev. (ft)	1124.83	.	1124.83	.	1001.22	1001.22	1182.88	1182.88	1175.49	1175.49
Depth to Water (ft)	73.59	.	80.71	.	24.39	30.30	91.95	88.40	113.72	110.30
Groundwater Elevation (ft)	1051.24	.	1044.12	.	976.83	970.92	1090.93	1094.48	1061.77	1065.19
Conductivity ($\mu\text{mho}/\text{cm}$)	56.7	.	574	.	397	378	300	336	274	286
Dissolved Oxygen (ppm)	4.94	.	2.24	.	8.89	0.76	9.02	4.6	9.31	8.84
Oxidation/Reduction (mV)	135	.	116	.	-145	58	194	120	165	76
Temperature (degrees C)	15.5	.	22.3	.	14	15.9	11.6	18.2	12.7	17.2
Turbidity (NTU)	17	.	27	.	.	.	9	6	10	32
pH	7.33	.	7.49	.	7.93	7.32	7.95	7.97	8.5	8.34
MISCELLANEOUS										
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	343	371	287	.	236	.
Dissolved Solids (mg/L)	315	308	342	331	180	199	172	174	143	161
Suspended Solids (mg/L)	<	<	<	<	2	<	2 J	<	2.4 J	<
Turbidity (NTU)	.	.	.	.	23.1	4.05	0.63	.	2.2	.
pH	.	.	.	.	7.88	7.85	8.1	8.1	8.2	8
MAJOR IONS (mg/L)										
Calcium	61.7	59.8	59.9	59.7	38	38.6	33.7	32.3	26.2	29.3
Magnesium	36.9	35.7	35.9	35.9	23.3	23.3	21.2	20.8	16.6	17.7
Potassium	1.67	1.6	1.95	1.99	2.19	<	<	<	<	<
Sodium	10.7	10.3	10.8	10.8	0.578	0.45	<	<	<	<
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	270	270	288	292	185	180	159	173	130	144
Chloride	18.3	18.9	20.4	20.9	1.36	1.18	2 J	2.3 J	2 J	2.4 J
Fluoride	<	<	<	<	<	<	0.09 J	<	0.11 J	<
Nitrate as N	0.71	0.71	0.7	0.7	<	0.141	0.3 J	0.32 J	0.55	0.83
Sulfate	3.4	3.6	3.8	3.7	3.41	3.1	1.7 J	1.4 J	1.2 J	1.5 J
Charge Balance	4.7	2.9	0	-0.8	1.1	2.1	3.7	-2	0.6	-0.4
TRACE METALS (mg/L)										
Aluminum	<	<	<	<	<	<	<	<	<	<
Arsenic	<	<	<	<	.	.	<	<	<	<
Barium	0.0216	0.021	0.0211	0.0213	0.00555	0.00622	<	<	<	<
Boron	<	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	<	<	.	.	.	.
Chromium	0.0065	0.0059	0.0106	0.0109	.	.	<	<	0.0084	<
Cobalt	<	<	<	<	.	.	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<	<
Iron	0.115	0.0887	0.162	0.166	2.61	0.298	<	<	<	<
Lead (PMS)	.	.	.	.	0.00061	<	.	.	.	.
Lithium	<	<	<	<	<	<	.	.	.	.
Manganese	0.0102	0.0083	<	<	0.0283	<	<	<	<	<
Molybdenum	.	.	.	.	.	.	<	<	<	<
Nickel (PMS)	.	.	.	.	<	<	.	.	.	.
Nickel	0.222	0.204	0.221	0.222	.	.	<	<	<	<
Selenium	<	<	<	<	.	.	<	<	<	<
Strontium	0.0258	0.0249	0.0261	0.0263	0.0252	0.0238	<	0.012	0.01	0.013
Uranium (PMS)	.	.	.	.	<	<	.	.	.	.
Uranium (KPA)	<	<	<	<	.	.	<	<	<	<
Vanadium	<	<	<	<	.	.	<	<	<	<
Zinc	<	<	<	<	.	.	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-539			GW-540			GW-542		GW-543	
Site	LII			LII			CDLVI		CDLVI	
Date	01/23/01	07/19/01	08/14/01	01/24/01	07/19/01	08/14/01	01/23/01	07/24/01	01/24/01	07/23/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type										
FIELD MEASUREMENTS										
Time Sampled	12:45	11:40	9:45	10:15	13:05	10:45	9:45	9:35	13:10	10:15
Measuring Point Elev. (ft)	1093.22	1093.22	1093.22	1072.32	1072.32	1072.32	1051.77	1051.77	1023.98	1023.98
Depth to Water (ft)	111.85	111.84	111.90	86.60	87.35	87.45	70.33	71.66	64.00	64.50
Groundwater Elevation (ft)	981.37	981.38	981.32	985.72	984.97	984.87	981.44	980.11	959.98	959.48
Conductivity ($\mu\text{mho}/\text{cm}$)	321	327	127	376	417	117	218	215	510	525
Dissolved Oxygen (ppm)	9.96	4.38	7.11	9.1	2.56	5.78	16.9	3.83	5.84	5.37
Oxidation/Reduction (mV)	154	114	142	75	44	136	214	130	195	124
Temperature (degrees C)	13.4	19.9	20	12.2	19.8	19.3	13.5	16.2	13.4	20.5
Turbidity (NTU)	12	10	17	0	15	13	.	17	23	37
pH	8.24	7.9	7.3	8.05	8.12	7.72	6.71	6.53	7.62	7.34
MISCELLANEOUS										
Conductivity ($\mu\text{mho}/\text{cm}$)	323	.	.	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	175	186	.	211	223	.	143	134	290	290
Suspended Solids (mg/L)	<	<	.	<	<	.	4	<	<	<
Turbidity (NTU)	0.36	.	.	.	.	.	.	.	.	.
pH	8.3	8.2	.	8.1	8.2	.	7	7	7.6	7.4
MAJOR IONS (mg/L)										
Calcium	33.1	34.4	.	34.2	32.4	.	25.9	25.3	58.4	58.2
Magnesium	21	21	.	25.9	24.9	.	14.3	12.6	34.7	33
Potassium	<	<	.	<	<	.	<	<	<	<
Sodium	<	<	.	15.1	13.9	.	<	<	<	<
Alkalinity as CO ₃	<	<	.	<	<	.	<	<	<	<
Alkalinity as HCO ₃	157	159	.	205	205	.	117	117	261	253
Chloride	5.8	5.3	.	2.2 J	2.5 J	.	1.9 J	2 J	2.8 J	3.1
Fluoride	0.12 J	0.21 J	.	0.12 J	0.2 J	.	0.11 J	0.2 J	<	<
Nitrate as N	0.54	.	3	0.15 J	.	0.22 J	0.37 J	0.38 J	0.41 J	0.44 J
Sulfate	6.9	6.6	.	9.1	10.2	.	3 J	2.3 J	17.4	18.8
Charge Balance	-1.5	-0.9	.	2.4	-0.5	.	2.7	-0.8	1.7	0.8
TRACE METALS (mg/L)										
Aluminum	<	<	.	<	<	.	0.42	<	<	<
Arsenic	<	<	.	<	<	.	<	<	<	<
Barium	<	<	.	0.01	0.011	.	0.013	0.015	0.011	0.012
Boron	<	<	.	<	<	.	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.	.
Chromium	0.013	0.0096	.	<	<	.	<	<	<	<
Cobalt	<	<	.	<	<	.	<	<	<	<
Copper	<	<	.	<	<	.	<	<	<	<
Iron	<	<	.	<	<	.	0.43	<	<	<
Lead (PMS)	.	.	.	.	.	.	.	.	.	.
Lithium	.	.	.	.	.	.	.	.	.	.
Manganese	<	<	.	<	<	.	<	<	<	<
Molybdenum	0.0038	0.0029	.	0.0024	0.003	.	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.	.
Nickel	0.038	0.026	.	<	<	.	<	<	<	<
Selenium	<	<	.	<	<	.	<	<	<	<
Strontium	0.017	0.019	.	0.024	0.026	.	0.017	0.018	0.028	0.03
Uranium (PMS)	.	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	.	<	<	.	<	<	<	<
Vanadium	<	<	.	<	<	.	<	<	<	<
Zinc	<	<	.	<	<	.	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-544		GW-557				GW-560		
Site	CDLVI		LV				CDLVII		
Date	01/24/01	07/23/01	01/17/01		07/18/01		05/21/01	07/25/01	11/06/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type			Dup		Dup				
FIELD MEASUREMENTS									
Time Sampled	13:20	13:25	9:55	.	9:20	.	10:57	9:40	9:15
Measuring Point Elev. (ft)	1045.20	1045.20	1081.36	.	1081.36	.	949.05	949.05	949.05
Depth to Water (ft)	63.63	63.81	124.70	.	124.04	.	45.40	47.05	49.10
Groundwater Elevation (ft)	981.57	981.39	956.66	.	957.32	.	903.65	902.00	899.95
Conductivity ($\mu\text{mho}/\text{cm}$)	502	527	333	.	347	.	322	343	329
Dissolved Oxygen (ppm)	4.13	5.86	7.66	.	5.04	.	6.27	3.68	1.03
Oxidation/Reduction (mV)	152	59	209	.	1.41	.	174	171	193
Temperature (degrees C)	13.3	20	13.3	.	17.4	.	13.8	16.9	14.3
Turbidity (NTU)	6	47	22	.	10	.	27	22	12
pH	7.8	7.77	6.98	.	7.97	.	7.34	7.18	7.4
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	308	310	.	.	.	.	.
Dissolved Solids (mg/L)	278	290	188	184	206	196	172	178	162
Suspended Solids (mg/L)	<	<	1.6 J	2.8 J	<	<	<	<	<
Turbidity (NTU)	.	.	1.1	1.1	.	.	.	.	.
pH	8	8	7.8	7.8	7.9	7.8	8	7.6	7.6
MAJOR IONS (mg/L)									
Calcium	53.8	54.5	37.9	38.3	36.5	36.7	39	39	37.8
Magnesium	32.6	31.4	21.9	22	21.1	21.3	16.6	16.9	16.3
Potassium	<	<	<	<	<	<	<	<	<
Sodium	5.9	6.8	<	<	<	<	<	<	<
Alkalinity as CO ₃	<	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	234	242	170	170	170	170	153	163	163
Chloride	9.9	10	2.2 J	2.2 J	2.6 J	2.6 J	1.8 J	2.3 J	2.2 J
Fluoride	<	0.2 J	0.1 J	0.1 J	0.2 J	0.19 J	0.1 J	0.23 J	0.19 J
Nitrate as N	0.54	0.57	0.74	0.73	0.73	0.75	0.26 J	0.32 J	0.32 J
Sulfate	15	16.8	2.2 J	2.2 J	2 J	2 J	2.4 J	2.6 J	3.2 J
Charge Balance	2.9	0.8	3.4	3.8	1.5	1.9	4	1.2	-0.5
TRACE METALS (mg/L)									
Aluminum	<	<	<	<	<	<	<	<	<
Arsenic	<	<	<	<	<	<	<	<	<
Barium	0.012	0.013	0.011	0.01	0.012	0.011	0.23	0.23	0.23
Boron	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	0.015	<	<
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	<	<	<	<	<	<	<	<	<
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lithium	.	.	.	.	.	.	.	.	<
Manganese	<	<	<	<	<	<	<	<	<
Molybdenum	<	<	<	<	<	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	0.014	<	<
Selenium	<	<	<	<	<	<	<	<	<
Strontium	0.026	0.028	0.015	0.015	0.018	0.018	0.024	0.026	0.025
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-562				GW-564			
	Site		CDLVII		Site		CDLVII	
Date	05/21/01	07/24/01	11/01/01	11/05/01	05/21/01	07/24/01	07/24/01	07/24/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type					Dup		Dup	
FIELD MEASUREMENTS								
Time Sampled	13:30	9:30	9:45	12:50	9:50	.	12:25	.
Measuring Point Elev. (ft)	934.69	934.69	934.69	934.69	937.97	.	937.97	.
Depth to Water (ft)	10.00	11.50	13.46	13.58	11.95	.	12.11	.
Groundwater Elevation (ft)	924.69	923.19	921.23	921.11	926.02	.	925.86	.
Conductivity ($\mu\text{mho}/\text{cm}$)	385	404	378	377	276	.	276	.
Dissolved Oxygen (ppm)	5.92	3.03	4.63	7.43	7.49	.	3.4	.
Oxidation/Reduction (mV)	167	143	219	121	159	.	131	.
Temperature (degrees C)	16.8	19.7	14.7	17.6	16.8	.	17.5	.
Turbidity (NTU)	38	12	24	20	21	.	10	.
pH	6.93	7.47	7.49	7.65	6.91	.	6.42	.
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	202	211	200	.	153	155	155	156
Suspended Solids (mg/L)	6	3.2 J	4.8	.	3.8 J	1.6 J	<	<
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	7.9	7.7	7.8	.	7.5	7.4	7	7
MAJOR IONS (mg/L)								
Calcium	38.5	40.3	38.1	.	32	31.9	33.1	33.3
Magnesium	22.4	22.9	22.3	.	13.5	13.4	12.5	12.7
Potassium	<	<	<	.	<	<	<	<
Sodium	<	<	<	.	<	<	<	<
Alkalinity as CO ₃	<	<	<	.	<	<	<	<
Alkalinity as HCO ₃	216	195	192	.	126	125	120	119
Chloride	2.1 J	2.7 J	2.5 J	.	2.5 J	2.5 J	3.6	3.6
Fluoride	0.08 J	0.2 J	0.17 J	.	0.08 J	0.08 J	0.2 J	0.2 J
Nitrate as N	0.28 J	0.37 J	0.34 J	.	0.67	0.64	0.88	0.9
Sulfate	2 J	2.1 J	2.3 J	.	5.8	5.7	8.8	8.6
Charge Balance	-6.8	0	-1.3	.	0.4	0.6	-1.2	-0.3
TRACE METALS (mg/L)								
Aluminum	0.56	0.33	0.59	.	<	<	<	<
Arsenic	<	<	<	.	<	<	<	<
Barium	0.013	0.013	0.012	.	0.017	0.017	0.022	0.022
Boron	<	<	<	.	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	<	<	<	.	<	<	<	<
Cobalt	<	<	<	.	<	<	<	<
Copper	<	<	<	.	<	<	<	<
Iron	0.76	0.37	0.41	.	0.26	0.34	<	<
Lead (PMS)	.	.	<	.	.	.	.	.
Lithium	.	.	.	.	.	.	.	.
Manganese	0.015	<	<	.	<	<	<	<
Molybdenum	<	<	<	.	<	<	<	<
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	<	<	<	.	<	<	<	<
Selenium	<	<	<	.	<	<	<	<
Strontium	0.021	0.022	0.021	.	0.034	0.034	0.048	0.049
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	.	<	<	<	<
Vanadium	<	<	<	.	<	<	<	<
Zinc	<	<	<	.	<	<	0.025	0.022

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-564			GW-608		GW-609	GW-612	
Site	CDLVII			CRSP		CRSP	CRSP	
Date	11/01/01	11/05/01	03/21/01	08/20/01	01/10/01	03/29/01	08/22/01	
Program	WRRP	WRRP	WRRP	GWPP	GWPP	WRRP	GWPP	GWPP
Sample Type	Dup							
FIELD MEASUREMENTS								
Time Sampled	12:20	.	13:55	13:20	7:40	10:55	8:00	9:20
Measuring Point Elev. (ft)	937.97	.	937.97	1074.75	1074.75	1112.31	1131.03	1131.03
Depth to Water (ft)	12.96	.	12.90	133.04	139.43	171.13	121.60	128.31
Groundwater Elevation (ft)	925.01	.	925.07	941.71	935.32	941.18	1009.43	1002.72
Conductivity ($\mu\text{mho}/\text{cm}$)	272	.	271	375	354	355	494	431
Dissolved Oxygen (ppm)	4.71	.	5.02	1.2	2.96	7.82	4.84	0.96
Oxidation/Reduction (mV)	252	.	160	146	-46	180	175	74
Temperature (degrees C)	17.2	.	16.4	14	15.6	11.7	10.7	16.1
Turbidity (NTU)	5	.	4	.	.	31	.	.
pH	6.87	.	6.8	8	7.85	7.71	7.67	7.7
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	323	328	.	413	383
Dissolved Solids (mg/L)	144	139	.	158	195	240	220	223
Suspended Solids (mg/L)	<	<	.	1	<	7	12	<
Turbidity (NTU)	.	.	.	2.73	1.62	.	45.3	4.95
pH	7.1	7.1	.	8.22	8.19	.	7.84	7.82
MAJOR IONS (mg/L)								
Calcium	30.4	30.6	.	20.3	22.1	34	42.9	40.8
Magnesium	10.9	11	.	20.5	21.4	21.4	29.3	31.7
Potassium	<	<	.	19.4	18.6	0.958	2.06	2.51
Sodium	<	<	.	3.18	3.18	1.94	0.623	0.578
Alkalinity as CO_3	<	<	.	<	<	.	<	<
Alkalinity as HCO_3	113	111	.	154	178	.	230	216
Chloride	4.7	4.8	.	2.72	2.19	.	2.07	1.71
Fluoride	0.18 J	0.18 J	.	<	<	.	<	<
Nitrate as N	0.62	0.62	.	0.0489	<	.	0.205	0.19
Sulfate	12.8	12.8	.	3.75	3.28	.	3.64	3.48
Charge Balance	-5.6	.	.	1.5	-2.9	.	-1.2	3.1
TRACE METALS (mg/L)								
Aluminum	<	<	.	<	<	<	<	<
Arsenic	<	<	.	.	.	<	.	.
Barium	0.026	0.026	.	0.0176	0.0196	0.0108	0.0185	0.0141
Boron	<	<	.	<	<	<	0.116	0.105
Chromium (PMS)	.	.	.	<	<	.	<	<
Chromium	<	<	.	.	.	<	.	.
Cobalt	<	<	.	.	.	<	.	.
Copper	<	<	.	<	<	<	<	<
Iron	<	<	.	0.251	0.296	<	6.95	0.611
Lead (PMS)	.	.	.	<	<	.	0.0214	0.0029
Lithium	<	<	.	0.0512	0.0518	<	<	<
Manganese	<	<	.	0.00646	0.0811	<	0.0646	0.00666
Molybdenum	<	<	.	.	.	<	.	.
Nickel (PMS)	.	.	.	<	<	.	<	<
Nickel	<	<	.	.	.	<	.	.
Selenium	<	<	.	.	.	<	.	.
Strontium	0.063	0.061	.	0.0254	0.0293	0.0113	0.0222	0.0173
Uranium (PMS)	.	.	.	0.00153	0.00118	.	0.00062	0.0006
Uranium (KPA)	<	<	.	.	.	<	.	.
Vanadium	<	<	.	.	.	<	.	.
Zinc	0.023	0.034	.	.	.	<	.	.

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-709			GW-731				
Site	LII			CRSDB				
Date	01/22/01	07/19/01	08/14/01	04/16/01	04/17/01	04/18/01	04/19/01	10/09/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	12:35	9:35	13:25	12:55	12:30	10:45	10:30	13:25
Measuring Point Elev. (ft)	906.78	906.78	906.78	1049.38	1049.38	1049.38	1049.38	1049.38
Depth to Water (ft)	25.65	30.21	30.05	124.69	124.72	124.86	124.53	125.64
Groundwater Elevation (ft)	881.13	876.57	876.73	924.69	924.66	924.52	924.85	923.74
Conductivity ($\mu\text{mho}/\text{cm}$)	254	285	89	265	276	286	285	250
Dissolved Oxygen (ppm)	12.11	7.36	6.38	9.55	7.52	10.79	7.09	8.49
Oxidation/Reduction (mV)	140	135	83	172	215	201	208	260
Temperature (degrees C)	10.2	19.6	21.2	15.8	11.5	10.8	11.7	15.5
Turbidity (NTU)		6	16	4	21	9	27	34
pH	9.68	8.14	7.86	7.82	8.12	8.25	8.09	7.33
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	258							
Dissolved Solids (mg/L)	251	153		238	174	188	185	165
Suspended Solids (mg/L)	<	<		<	<	<	<	<
Turbidity (NTU)	0.16							
pH	8.9	8.4						
MAJOR IONS (mg/L)								
Calcium	20.4	20.8		27.6	28.4	28.9	28.4	28.4
Magnesium	25.2	23.8		18.2	18.2	18.5	17.9	18.5
Potassium	<	<		1.84	1.55	1.41	1.22	1.61
Sodium	<	<		0.779	0.675	0.627	0.568	0.779
Alkalinity as CO ₃	35.6	4.3 J						
Alkalinity as HCO ₃	109	141						
Chloride	2.4 J	2.7 J						
Fluoride	0.12 J	0.21 J						
Nitrate as N	0.16 J		0.21 J					
Sulfate	3.5 J	4 J						
Charge Balance	2.5	3						
TRACE METALS (mg/L)								
Aluminum	<	<		<	<	<	<	0.0533
Arsenic	<	<		<	<	<	<	<
Barium	0.42	0.5		0.008	0.008	0.0081	0.0077	0.0078
Boron	<	<		<	<	<	<	<
Chromium (PMS)	.	.		.	.	.	.	.
Chromium	<	<		<	<	<	<	<
Cobalt	<	<		<	<	<	<	<
Copper	<	<		<	<	<	<	<
Iron	<	<		0.0114	0.0526	0.0516	0.0221	0.367
Lead (PMS)	.	.		.	.	.	.	.
Lithium	.	.		<	<	<	<	<
Manganese	<	<		<	<	<	<	<
Molybdenum	<	0.0023		<	<	<	<	.
Nickel (PMS)	.	.		.	.	.	.	.
Nickel	<	<		<	<	<	<	<
Selenium	<	<		<	<	<	<	<
Strontium	0.033	0.037		0.0141	0.014	0.0129	0.0122	0.014
Uranium (PMS)	.	.		.	.	.	.	.
Uranium (KPA)	<	<		<	<	<	<	<
Vanadium	<	<		<	<	<	<	<
Zinc	<	<		<	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-732						GW-757		GW-796	
Site	CRSDB						LII		LV	
Date	04/16/01	04/17/01		04/18/01	04/19/01	10/09/01	01/22/01	07/23/01	01/18/01	07/18/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type		Dup								
FIELD MEASUREMENTS										
Time Sampled	9:45	9:25	.	9:50	9:30	9:35	10:20	9:50	10:00	12:45
Measuring Point Elev. (ft)	1064.29	1064.29	.	1064.29	1064.29	1064.29	961.61	961.61	1052.62	1052.62
Depth to Water (ft)	157.31	157.58	.	157.80	157.74	158.12	81.90	84.65	87.58	84.79
Groundwater Elevation (ft)	906.98	906.71	.	906.49	906.55	906.17	879.71	876.96	965.04	967.83
Conductivity ($\mu\text{mho}/\text{cm}$)	258	278	.	303	306	289	297	324	238	234
Dissolved Oxygen (ppm)	7.96	6.87	.	7.71	7.16	6.59	10.66	4.99	9.83	4.52
Oxidation/Reduction (mV)	209	225	.	220	218	273	168	124	205	136
Temperature (degrees C)	13.8	12.3	.	12.2	13	13.2	8	21.6	13.4	19.9
Turbidity (NTU)	11	11	.	13	8	18	.	16	27	19
pH	8.04	7.78	.	7.76	7.47	7.14	9.97	9.66	8.79	8.09
MISCELLANEOUS										
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	257	.	194	.
Dissolved Solids (mg/L)	156	180	197	202	233	173	171	170	77	132
Suspended Solids (mg/L)	14.1	10.2	5.5	5.2	<	<	1.6 J	3 J	11.2	<
Turbidity (NTU)	.	.	.	.	.	.	0.3	.	6	.
pH	.	.	.	.	.	.	9.7	9.9	9.5	8.2
MAJOR IONS (mg/L)										
Calcium	27.4	29	30.1	30.2	30.4	31.1	4	3.8	13.3	24.7
Magnesium	18.7	19.3	20.1	19.6	19.4	20.6	6.6	4.7	10.6	14.7
Potassium	1.27	1.14	1.2	1.14	1.12	1.28	17.1	16.1	25.8	<
Sodium	1.14	0.966	1.04	0.936	0.94	0.802	39.2	37.5	<	<
Alkalinity as CO ₃	.	.	.	.	.	.	74.6	56.6	34.5	<
Alkalinity as HCO ₃	.	.	.	.	.	.	39	56.6	63.4	118
Chloride	.	.	.	.	.	.	2.3 J	2.4 J	2.1 J	2.6 J
Fluoride	.	.	.	.	.	.	1.5	1.7	0.09 J	0.19 J
Nitrate as N	.	.	.	.	.	.	0.25 J	0.3 J	0.22 J	0.21 J
Sulfate	.	.	.	.	.	.	13	13.2	1.4 J	1 J
Charge Balance	.	.	.	.	.	.	3.1	-1	5.6	1.7
TRACE METALS (mg/L)										
Aluminum	0.104	<	<	<	<	0.0798	<	<	0.22	<
Arsenic	<	<	<	<	<	<	<	<	<	<
Barium	0.0114	0.0116	0.0123	0.0131	0.0131	0.0097	0.087	0.075	<	<
Boron	<	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<	0.024	<
Cobalt	<	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<	<
Iron	0.0902	0.0361	0.0399	0.0148	0.0186	0.0472	<	<	0.16	<
Lead (PMS)	.	.	.	.	.	.	.	.	.	.
Lithium	<	<	<	<	<	<	.	.	.	.
Manganese	<	<	<	<	<	<	<	<	<	<
Molybdenum	<	<	<	<	<	.	0.012	0.014	0.0052	<
Nickel (PMS)	.	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<	<
Selenium	<	<	<	<	<	<	<	<	<	<
Strontium	0.0163	0.0178	0.019	0.0218	0.0219	0.015	0.23	0.2	0.015	0.014
Uranium (PMS)	.	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	0.01	<	<
Zinc	<	<	<	<	<	<	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-797		GW-798					GW-799	
Site	LV		CDLVII					LV	
Date	01/16/01	07/23/01	01/08/01	05/21/01	07/11/01	07/25/01	11/05/01	01/16/01	07/18/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
FIELD MEASUREMENTS									
Time Sampled	10:40	13:05	13:35	12:55	8:55	9:30	9:50	10:35	9:35
Measuring Point Elev. (ft)	1060.00	1060.00	1006.00	1006.00	1006.00	1006.00	1006.00	981.29	981.29
Depth to Water (ft)	77.55	76.95	85.69	82.08	83.97	84.55	85.97	21.76	20.83
Groundwater Elevation (ft)	982.45	983.05	920.31	923.92	922.03	921.45	920.03	959.53	960.46
Conductivity ($\mu\text{mho}/\text{cm}$)	360	329	259	265	284	297	269	297	277
Dissolved Oxygen (ppm)	7.8	3.6	9.22	7.28	6.41	5.08	6.09	8.24	6.5
Oxidation/Reduction (mV)	200	95	126	27	167	200	119	202	141
Temperature (degrees C)	10.5	24	10.4	17.1	18.1	17.9	16.3	11.2	17.4
Turbidity (NTU)	17	14	21	17	17	28	10	32	17
pH	8	7.8	8.09	7.62	7.48	7.55	7.63	8.03	8.09
MISCELLANEOUS									
Conductivity ($\mu\text{mho}/\text{cm}$)	321	.	.	.	.	.	.	261	.
Dissolved Solids (mg/L)	209	202	180	151	292	142	137	158	172
Suspended Solids (mg/L)	1.6 J	<	<	5.4	<	<	<	3.6 J	<
Turbidity (NTU)	0.099 J	.	.	.	.	.	.	0.88	.
pH	8.1	8.1	.	8	.	7.8	8	8.3	8.3
MAJOR IONS (mg/L)									
Calcium	36.3	38.2	28.1	28.7	30.5	28.6	29.9	32.7	31.9
Magnesium	21.1	21.8	16.2	16.1	16.9	15.9	16.8	17.4	17
Potassium	<	<	1.77	<	1.56	<	<	<	<
Sodium	5.3	<	0.471	<	0.472	<	<	<	<
Alkalinity as CO ₃	<	<	.	<	.	<	<	<	1.7 J
Alkalinity as HCO ₃	164	169	.	133	.	135	132	138	139
Chloride	3.2	3.7	.	1.5 J	.	2 J	1.9 J	2 J	2.3 J
Fluoride	0.13 J	0.21 J	.	0.08 J	.	0.2 J	0.18 J	0.17 J	0.25 J
Nitrate as N	0.5	0.52	.	0.69	.	0.74	0.75	1.1	1.1
Sulfate	14	14.8	.	2.6 J	.	2.5 J	3 J	4.1 J	3.8 J
Charge Balance	1.1	-1.7	.	0.9	.	-0.3	3.3	3.8	2.3
TRACE METALS (mg/L)									
Aluminum	<	<	<	0.15	<	<	<	<	<
Arsenic	<	<	<	<	<	<	<	<	<
Barium	<	<	0.01	<	0.0104	<	0.01	<	<
Boron	<	<	<	<	<	<	<	<	<
Chromium (PMS)	.	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	0.058	0.061
Cobalt	<	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<	<
Iron	<	<	<	0.21	<	<	<	<	<
Lead (PMS)	.	.	.	.	.	.	.	.	.
Lithium	.	.	<	<	<	<	<	.	.
Manganese	<	<	<	<	<	<	<	<	<
Molybdenum	<	<	<	<	<	<	<	0.0036	0.0042
Nickel (PMS)	.	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<	<
Selenium	<	<	<	<	<	<	<	<	<
Strontium	0.02	0.024	0.0162	0.017	0.0164	0.018	0.017	0.02	0.023
Uranium (PMS)	.	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	GW-801		GW-827		GW-831		MCK 2.0	
Site	LV		CDLVI		FCAP		EXP-SW	
Date	01/16/01	07/18/01	01/24/01	07/24/01	01/08/01	07/12/01	02/22/01	08/14/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								
FIELD MEASUREMENTS								
Time Sampled	13:30	12:05	10:40	11:55	12:00	9:35	14:18	12:21
Measuring Point Elev. (ft)	1097.16	1097.16	1051.58	1051.58	1091.29	1091.29	.	.
Depth to Water (ft)	119.54	118.03	45.60	45.77	133.05	131.79	.	.
Groundwater Elevation (ft)	977.62	979.13	1005.98	1005.81	958.24	959.50	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	282	277	330	293	347	379	58	179
Dissolved Oxygen (ppm)	8.46	6.49	2.45	2.62	6.88	3.42	16.37	10.26
Oxidation/Reduction (mV)	210	102	195	127	176	120	85	272
Temperature (degrees C)	12.1	18.7	13.1	16.3	9	17.9	7.6	19.4
Turbidity (NTU)	25	21	27	14	2	27	40	19
pH	8.11	7.68	7.06	7.73	8.7	8.25	8.19	8.42
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	269	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	160	158	192	171	230	213	90	255
Suspended Solids (mg/L)	14.8	<	<	<	<	<	5.7	9.9
Turbidity (NTU)	6.6	.	.	.	.	.	.	.
pH	8	8	8.1	7.8	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	33.3	30.9	31.4	32.6	40.4	41.2	18.4	48.3
Magnesium	18.9	17.8	19	18.8	26.5	26.1	3.91	16.3
Potassium	<	<	<	<	1.94	1.66	2.47	4.4
Sodium	<	<	<	<	0.598	0.526	0.88	2.4
Alkalinity as CO ₃	<	<	<	<	.	.	<	<
Alkalinity as HCO ₃	145	147	155	158	.	.	50	184
Chloride	2.1 J	2.4 J	1.7 J	1.8 J	.	.	1.8	1.7
Fluoride	<	0.19 J	0.12 J	0.2 J	.	.	<	<
Nitrate as N	0.19 J	0.23 J	0.2 J	<	.	.	.	.
Sulfate	2.9 J	2.8 J	1.9 J	1.8 J	.	.	16.5	29.6
Charge Balance	5.2	1.1	0.5	0.2	.	.	.	-4.5
TRACE METALS (mg/L)								
Aluminum	0.49	<	<	<	<	<	0.293	0.0966
Arsenic	<	<	<	<	<	<	0.0067	0.0194
Barium	<	<	<	<	0.0181	0.0173	0.0302	0.0681
Boron	<	<	<	<	<	<	0.0429	0.223
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	0.4	<	<	<	0.137	0.109	0.408	0.209
Lead (PMS)	.	.	.	.	.	.	.	.
Lithium	.	.	.	.	<	<	0.0118	0.0732
Manganese	<	<	<	<	0.0499	0.035	0.0562	0.128
Molybdenum	<	<	<	<	<	.	.	.
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<
Selenium	<	<	<	<	<	<	<	<
Strontium	0.015	0.017	0.016	0.018	0.0259	0.0249	0.205	0.868
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	0.033	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	MCK 2.05				OF 301		SCR1.25SP	
Site	EXP-SW				KHQ		EXP-SW	
Date	02/22/01		08/14/01		04/24/01	10/09/01	02/22/01	08/14/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type	Dup	Dup	Dup	Dup				
FIELD MEASUREMENTS								
Time Sampled	14:21	.	12:27	.	12:06	9:06	13:05	8:43
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	159	.	167	.	183	186	80	192
Dissolved Oxygen (ppm)	11.62	.	8.58	.	9.69	8.54	12.51	10.31
Oxidation/Reduction (mV)	45	.	200	.	190	145	110	115
Temperature (degrees C)	12.6	.	15.6	.	18.2	15.8	11.1	14.8
Turbidity (NTU)	6	.	260	.	31	42	53	57
pH	7.67	.	8.16	.	8.79	8.72	8.9	8.36
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	.	.	.	.	.	.	.	.
Dissolved Solids (mg/L)	200	210	322	348	177	213	122	231
Suspended Solids (mg/L)	6.4	<	<	6.8	<	<	12.7	9.5
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	.	.	.	.	.	.	.	.
MAJOR IONS (mg/L)								
Calcium	44.5	42	71.1	80.8	33.7	37.5	20.3	42.9
Magnesium	15.1	14.3	15.2	14.7	16.6	18.7	7.8	18.6
Potassium	4.16	3.95	6.59	7.55	<	1.27	0.849	1.29
Sodium	2	1.9	3.05	3.37	<	0.81	1.42	1.99
Alkalinity as CO_3	<	<	<	<	<	8	<	<
Alkalinity as HCO_3	145	150	192	204	140	152	74	176
Chloride	1.8	1.7	2	2	1.5	1.7	2.7	3.2
Fluoride	<	<	<	<	<	<	<	<
Nitrate as N	.	.	.	.	3	2.1	.	.
Sulfate	25.7	27.4	55.4	54.1	3.8	3.2	14.7	7.8
Charge Balance	.	.	0.5	3	-1.5	0.1	-3.6	0.2
TRACE METALS (mg/L)								
Aluminum	0.192	0.204	<	<	<	<	0.255	0.142
Arsenic	0.0473	0.0449	0.0542	0.0401	<	<	<	<
Barium	0.0779	0.0739	0.0957	0.0966	0.0608	0.0695	0.0337	0.0661
Boron	0.194	0.185	0.304	0.327	<	<	0.0264	0.0182
Chromium (PMS)	.	.	.	.	.	.	.	.
Chromium	<	<	<	<	<	<	<	<
Cobalt	<	<	<	<	<	<	<	<
Copper	<	<	<	<	<	<	<	<
Iron	1.15	1.06	0.841	0.421	<	0.0298	0.499	0.235
Lead (PMS)	.	.	.	.	.	.	.	.
Lithium	0.0636	0.0602	0.131	0.155	<	<	<	<
Manganese	0.871	0.825	0.606	0.302	<	<	0.0239	0.0363
Molybdenum	.	.	.	.	<	<	.	.
Nickel (PMS)	.	.	.	.	.	.	.	.
Nickel	<	<	<	<	<	<	<	<
Selenium	0.0108	0.0102	<	<	<	<	<	<
Strontium	0.715	0.678	1.28	1.44	0.0424	0.0482	0.0339	0.0533
Uranium (PMS)	.	.	.	.	.	.	.	.
Uranium (KPA)	<	<	<	<	<	<	<	<
Vanadium	<	<	<	<	<	<	<	<
Zinc	<	<	<	<	<	<	<	<

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	SCR1.5SW		SCR2.1SP			SCR2.2SP		SCR2.2SW
Site	EXP-SW		EXP-SW			EXP-SW		EXP-SW
Date	02/19/01	08/14/01	02/20/01	08/14/01	02/19/01	08/14/01	02/19/01	02/19/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type			Dup					
FIELD MEASUREMENTS								
Time Sampled	9:55	8:10	10:00	.	8:30	11:00	9:05	10:10
Measuring Point Elev. (ft)	.	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	341	463	223	.	455	396	412	218
Dissolved Oxygen (ppm)	7.87	3.25	6.94	.	2.78	5.77	3.27	7.62
Oxidation/Reduction (mV)	205	235	174	.	213	153	215	177
Temperature (degrees C)	9.5	19.3	12.3	.	17.7	11.7	15.6	7.1
Turbidity (NTU)	.	.	.	.	.	.	.	.
pH	7.17	7.4	7.59	.	6.89	6.93	6.79	7.13
MISCELLANEOUS								
Conductivity ($\mu\text{mho}/\text{cm}$)	189.9	325	182.3	181.8	398	310	369	170.5
Dissolved Solids (mg/L)	107	190	88	94	221	172	204	98
Suspended Solids (mg/L)	1	<	<	<	51	1	<	<
Turbidity (NTU)	5.52	7.49	2.8	2.89	19.4	5.33	1.2	4.08
pH	7.85	8.19	7.32	7.34	7.51	7.24	7.37	7.91
MAJOR IONS (mg/L)								
Calcium	22.7	43.7	20.5	20.6	52.9	52.4	52.9	20.5
Magnesium	8.8	18.9	8.2	8.34	21.1	5.93	15.2	6.8
Potassium	<	<	<	<	<	<	<	<
Sodium	1.11	1.51	2.73	2.74	2.32	1.65	2.02	2.7
Alkalinity as CO ₃	<	<	<	<	<	<	<	<
Alkalinity as HCO ₃	74.2	168	71.8	72.6	210	126	183	60.4
Chloride	2.55	2.55	5.74	5.45	3.61	3.22	3.41	5.3
Fluoride	<	<	<	<	<	<	<	<
Nitrate as N	0.118	0.104	0.169	0.161	0.233	2.67	0.51	0.239
Sulfate	10.1	6.91	8	7.75	6.82	9.86	8.32	8.06
Charge Balance	3.6	3	1.1	1.5	0.2	2.7	0.2	4.9
TRACE METALS (mg/L)								
Aluminum	0.275	0.537	<	<	0.447	<	<	<
Arsenic	.	.	.	.	.	.	.	.
Barium	0.0316	0.0599	0.02	0.0188	0.0546	0.0235	0.0429	0.0185
Boron	<	<	<	<	<	<	<	<
Chromium (PMS)	<	<	<	<	<	<	<	<
Chromium	.	.	.	.	.	.	.	.
Cobalt	.	.	.	.	.	.	.	.
Copper	<	<	<	<	<	<	<	<
Iron	0.197	0.284	0.0645	0.074	0.317	0.161	<	0.109
Lead (PMS)	<	<	<	<	<	<	<	<
Lithium	<	<	<	<	<	<	<	<
Manganese	0.00716	0.0189	<	<	0.0163	0.0113	<	<
Molybdenum	.	.	.	.	.	.	.	.
Nickel (PMS)	<	<	<	<	<	<	<	<
Nickel	.	.	.	.	.	.	.	.
Selenium	.	.	.	.	.	.	.	.
Strontium	0.0304	0.0636	0.0279	0.0269	0.07	0.0631	0.0707	0.0306
Uranium (PMS)	<	0.0015	0.00269	0.00216	0.00372	<	0.000972	0.0167
Uranium (KPA)	.	.	.	.	.	.	.	.
Vanadium	.	.	.	.	.	.	.	.
Zinc	.	.	.	.	.	.	.	.

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	SCR3.4SP	SCR3.5SP		SCR4.3SP		SCR4.4SW	
Site	EXP-SW	EXP-SW		EXP-SW		EXP-SW	
Date	02/20/01	03/13/01	08/14/01	01/17/01	07/16/01	02/20/01	08/14/01
Program	GWPP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP
Sample Type							
FIELD MEASUREMENTS							
Time Sampled	9:30	10:29	9:06	10:42	13:40	9:00	9:30
Measuring Point Elev. (ft)	.	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	283	149	166	396	375	261	291
Dissolved Oxygen (ppm)	6.21	11.8	9.75	7.65	6.5	7.21	1.93
Oxidation/Reduction (mV)	141	120	123	200	110	225	214
Temperature (degrees C)	11.9	15.5	16.7	11.2	17.7	10.7	20.4
Turbidity (NTU)	.	30	30	.	.	.	.
pH	7.13	7.93	8.26	6.86	6.97	6.94	6.98
MISCELLANEOUS							
Conductivity ($\mu\text{mho}/\text{cm}$)	234	.	.	366	.	179.9	253
Dissolved Solids (mg/L)	122	307	249	216	201	112	168
Suspended Solids (mg/L)	2	6	27	2.8 J	<	3	3
Turbidity (NTU)	3.55	.	.	1.8	.	26.3	26.6
pH	7.23	.	.	7.1	7.4	7.28	7.6
MAJOR IONS (mg/L)							
Calcium	28.7	41.5	50.6	47	42.8	22.8	37
Magnesium	12.3	13	16.7	14.5	16.7	6.91	9.84
Potassium	<	1.93	2.19	<	<	<	3.84
Sodium	0.529	1.33	1.7	6.8	<	1.32	1.45
Alkalinity as CO ₃	<	<	<	<	<	<	<
Alkalinity as HCO ₃	106	152	192	144	164	69.6	113
Chloride	1.44	2	2	10.3	3.9	3.32	3.71
Fluoride	<	0.1	<	0.2 J	0.27 J	<	<
Nitrate as N	0.426	.	.	2.3	1.1	0.951	0.201
Sulfate	6.72	16.2	13.2	24.6	10.8	11.1	11
Charge Balance	2.9	-2.8	-1.7	-0.1	-2.5	-0.6	3.9
TRACE METALS (mg/L)							
Aluminum	<	0.163	0.119	<	0.29	1.14	1.86
Arsenic	.	<	0.005	<	<	.	.
Barium	0.0511	0.0684	0.0893	0.14	0.16	0.0518	0.0679
Boron	<	0.0702	0.0872	<	<	<	<
Chromium (PMS)	<	.	.	.	.	<	<
Chromium	.	<	<	<	<	.	.
Cobalt	.	<	<	<	<	.	.
Copper	<	<	<	<	<	<	<
Iron	0.0622	0.354	0.26	<	0.31	0.858	0.888
Lead (PMS)	<	.	.	.	.	0.000602	0.000656
Lithium	<	0.0179	0.0212	.	.	<	<
Manganese	0.00789	0.0686	0.0856	<	0.012	0.0101	0.0389
Molybdenum	.	.	.	<	<	.	.
Nickel (PMS)	<	.	.	.	.	<	<
Nickel	.	<	<	<	<	.	.
Selenium	.	<	<	<	<	.	.
Strontium	0.0943	0.25	0.315	0.11	0.14	0.0572	0.0954
Uranium (PMS)	<	.	.	.	.	<	<
Uranium (KPA)	.	<	<	<	<	.	.
Vanadium	.	<	<	<	<	.	.
Zinc	.	<	<	<	<	.	.

APPENDIX F.1: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Field Measurements, Miscellaneous Analytes, Major Ions, and Trace Metals

Station	SCR5.1SP		SCR5.2SW	SCR5.2SP	SCR5.4SP	
Site	EXP-SW		EXP-SW	EXP-SW	EXP-SW	
Date	02/20/01	08/15/01	02/19/01	08/14/01	02/20/01	08/15/01
Program	GWPP	GWPP	GWPP	GWPP	GWPP	GWPP
Sample Type						
FIELD MEASUREMENTS						
Time Sampled	11:00	8:45	10:30	9:45	10:40	8:25
Measuring Point Elev. (ft)	.	.	.	.	.	.
Depth to Water (ft)	.	.	.	.	.	.
Groundwater Elevation (ft)	.	.	.	.	.	.
Conductivity ($\mu\text{mho}/\text{cm}$)	1737 R	353	1685 R	469	545	764
Dissolved Oxygen (ppm)	6.22	3.93	7.35	4.38	4.93	1.48
Oxidation/Reduction (mV)	173	223	163	213	182	239
Temperature (degrees C)	11.5	15.3	8.4	16.3	13.8	16.3
Turbidity (NTU)	.	.	.	.	.	.
pH	7.13	6.91	7.12	6.73	7.01	6.47
MISCELLANEOUS						
Conductivity ($\mu\text{mho}/\text{cm}$)	107.5	298	132.4	442	450	560
Dissolved Solids (mg/L)	59	165	75	256	250	328
Suspended Solids (mg/L)	<	<	1	<	<	2
Turbidity (NTU)	6.07	0.913	6.68	1.03	7.88	3.3
pH	6.92	7.68	7.67	7.67	6.79	7.12
MAJOR IONS (mg/L)						
Calcium	11.1	32.7	14	64.6	82.1	101
Magnesium	6.4	19.3	6.87	18.3	5.49	10.1
Potassium	<	<	<	<	<	<
Sodium	0.698	0.566	0.723	1.48	4.09	4.74
Alkalinity as CO ₃	<	<	<	<	<	<
Alkalinity as HCO ₃	56.2	144	42.2	202	189	248
Chloride	1.95	1.31	1.98	1.17	9.73	8.25
Fluoride	<	<	<	0.125	<	<
Nitrate as N	2.82	2.35	3.17	2.5	3.16	4.16
Sulfate	4.38	2.67	5.05	4.7	16.2	20.3
Charge Balance	-13.9	1.7	2.5	4.8	1.2	1.4
TRACE METALS (mg/L)						
Aluminum	0.363	<	0.445	0.223	<	0.257
Arsenic	.	.	.	.	.	.
Barium	0.0252	0.0144	0.0198	0.0632	0.0262	0.0354
Boron	<	<	<	<	<	<
Chromium (PMS)	<	<	<	<	<	<
Chromium	.	.	.	.	.	.
Cobalt	.	.	.	.	.	.
Copper	<	<	<	<	0.182	<
Iron	0.244	<	0.313	0.125	0.171	0.128
Lead (PMS)	<	<	<	<	<	<
Lithium	<	<	<	<	<	<
Manganese	0.00794	<	0.00541	0.0443	<	<
Molybdenum	.	.	.	.	.	.
Nickel (PMS)	<	<	<	<	<	<
Nickel	.	.	.	.	.	.
Selenium	.	.	.	.	.	.
Strontium	0.0158	0.0194	0.0194	0.0818	0.128	0.174
Uranium (PMS)	<	<	0.00132	0.000614	<	<
Uranium (KPA)	.	.	.	.	.	.
Vanadium	.	.	.	.	.	.
Zinc	.	.	.	.	.	.

APPENDIX F.2

VOLATILE ORGANIC COMPOUNDS

APPENDIX F.2: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Station	GW-141		GW-142					GW-143	
Site	LIV		KHQ					KHQ	
Date	01/23/01	07/17/01	04/09/01	04/10/01	04/11/01	04/12/01	10/08/01	04/09/01	
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									Dup
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<

Station	GW-143				GW-144			
Site	KHQ				KHQ			
Date	04/10/01	04/11/01	04/12/01	10/08/01	04/09/01	04/10/01	04/11/01	04/12/01
Program								
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								Dup
Chloroethanes (µg/L)								
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)								
Tetrachloroethene	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)								
Acetone	<	<	<	<	<	<	<	<
Trichlorofluoromethane	.	.	.	.	.	.	.	.

Station	GW-144	GW-145					GW-174		GW-175
Site	KHQ	KHQ					CRSP		CRSP
Date	10/08/01	04/09/01	04/10/01	04/11/01	04/12/01	10/08/01	03/20/01	08/21/01	03/20/01
Program									
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP
Sample Type									
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	6	5	8
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	8	9	8
Trichlorofluoromethane	.	.	.	.	.	.	.	.	.

APPENDIX F.2: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Station	GW-175	GW-177			GW-180			GW-217	
Site	CRSP	CRSP			CRSP			LIV	
Date	08/20/01	03/26/01		07/25/01	03/21/01	08/21/01		01/22/01	07/17/01
Program	GWPP	GWPP	GWPP	WRRP	GWPP	GWPP	GWPP	WRRP	WRRP
Sample Type		Dup				Dup			
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	11	11	13	<	<	<	<	<
1,1-Dichloroethane	<	18	17	17	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	7	<	<	<	22	17	18	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	4 J	4 J	5	<	<	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	7	<	<	.	4 J	4 J	3 J	<	<

Station	GW-231						GW-241		GW-301
Site	KHQ						CRSDB		CRBAWP
Date	04/09/01	04/10/01	04/11/01	04/12/01	10/08/01		03/22/01	08/16/01	01/09/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	WRRP
Sample Type					Dup				
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane

Station	GW-301			GW-305				GW-514	
Site	CRBAWP			LIV				FCAP	
Date	01/09/01	07/11/01		01/17/01	05/03/01	07/16/01	11/07/01	03/28/01	08/16/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP
Sample Type	Dup	Dup							
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	20	18	19	18	<	<
1,1-Dichloroethane	<	<	<	12	11	11	10	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	4.1	4.2	3.2	3.7	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane

APPENDIX F.2: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Station	GW-521		GW-522		GW-539		GW-540		GW-542
Site	LIV		LIV		LII		LII		CDLVI
Date	01/17/01	07/16/01	01/18/01	07/16/01	01/23/01	07/19/01	01/24/01	07/19/01	01/23/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	0.35 J	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<

Station	GW-542	GW-543		GW-544		GW-557			
Site	CDLVI	CDLVI		CDLVI		LV		07/18/01	
Date	07/24/01	01/24/01	07/23/01	01/24/01	07/23/01	01/17/01	WRRP	WRRP	WRRP
Program	WRRP	WRRP	WRRP	WRRP	WRRP	Dup	WRRP	WRRP	WRRP
Sample Type									Dup
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	2 J	<	2.2 J	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<

Station	GW-560			GW-562			GW-564		
Site	CDLVII			CDLVII			CDLVII		
Date	05/21/01	07/25/01	11/06/01	05/21/01	07/24/01	11/01/01	05/21/01	WRRP	07/24/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type								Dup	
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<

APPENDIX F.2: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Station	GW-564			GW-608		GW-609	GW-612		GW-709
Site	CDLVII			CRSP		CRSP	CRSP		LII
Date	07/24/01	11/01/01		03/21/01	08/20/01	01/10/01	03/29/01	08/22/01	01/22/01
Program	WRRP		WRRP	WRRP		GWPP	GWPP		WRRP
Sample Type	Dup		Dup						
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	<	<	<	26	21	<
1,1-Dichloroethane	<	<	<	<	<	<	41	34	<
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	1 J	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	24	22	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<	<

Station	GW-709	GW-757		GW-796		GW-797		GW-798	
Site	LII	LII		LV		LV		CDLVII	
Date	07/19/01	01/22/01	07/23/01	01/18/01	07/18/01	01/16/01	07/23/01	01/08/01	05/21/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	<	<	<	0.65 J	0.67 J	<	<	1 J	2.8
1,1-Dichloroethane	<	<	<	<	<	<	<	<	1.9
Chloroethenes (µg/L)									
Tetrachloroethene	<	<	<	<	<	<	<	2 J	5.5
Trichloroethene	<	<	<	<	<	<	<	<	0.59 J
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	2 J	3.7
1,1-Dichloroethene	<	<	<	<	<	<	<	1 J	0.99 J
Miscellaneous (µg/L)									
Acetone	<	<	1.9 J	<	<	<	2 J	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	.	10

Station	GW-798			GW-799		GW-801		GW-827	
Site	CDLVII			LV		LV		CDLVI	
Date	07/11/01	07/25/01	11/05/01	01/16/01	07/18/01	01/16/01	07/18/01	01/24/01	07/24/01
Program	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP	WRRP
Sample Type									
Chloroethanes (µg/L)									
1,1,1-Trichloroethane	2 J	2.6	1.9	<	<	<	<	<	<
1,1-Dichloroethane	1 J	1.6	1.6	<	<	<	<	<	<
Chloroethenes (µg/L)									
Tetrachloroethene	3 J	4.1	3.4	<	<	<	<	<	<
Trichloroethene	<	0.47 J	0.42 J	<	<	<	<	<	<
cis-1,2-Dichloroethene	2 J	3.8	3.8	<	<	<	<	<	<
1,1-Dichloroethene	2 J	2.2	2	<	<	<	<	<	<
Miscellaneous (µg/L)									
Acetone	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	.	8.6	6.6	<	<	<	<	<	<

APPENDIX F.2: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Volatile Organic Compounds

Station	GW-831		SCR1.25SP		SCR1.5SW		SCR2.1SP			
Site	FCAP		EXP-SW		EXP-SW		EXP-SW			
Date	01/08/01	07/12/01	02/22/01	08/14/01	02/19/01	08/14/01	02/20/01		08/14/01	
Program	WRRP	WRRP	WRRP	WRRP	GWPP	GWPP	GWPP	GWPP	GWPP	
Sample Type							Dup			
Chloroethanes (µg/L)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)										
Tetrachloroethene	<	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)										
Acetone	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<

Station	SCR2.2SP		SCR2.2SW	SCR3.4SP	SCR3.5SP		SCR4.3SP		SCR4.4SW	
Site	EXP-SW		EXP-SW	EXP-SW	EXP-SW		EXP-SW		EXP-SW	
Date	02/19/01	08/14/01	02/19/01	02/20/01	03/13/01	08/14/01	01/17/01	07/16/01	02/20/01	
Program	GWPP	GWPP	GWPP	GWPP	WRRP	WRRP	WRRP	WRRP	GWPP	
Sample Type										
Chloroethanes (µg/L)										
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)										
Tetrachloroethene	<	<	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)										
Acetone	<	<	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	.	.	<	<	<	<

Station	SCR4.4SW	SCR5.1SP		SCR5.2SW	SCR5.2SP	SCR5.4SP		
Site	EXP-SW	EXP-SW		EXP-SW	EXP-SW	EXP-SW		
Date	08/14/01	02/20/01	08/15/01	02/19/01	08/14/01	02/20/01	08/15/01	
Program	GWPP							
Sample Type								
Chloroethanes (µg/L)								
1,1,1-Trichloroethane	<	<	<	<	<	<	<	<
1,1-Dichloroethane	<	<	<	<	<	<	<	<
Chloroethenes (µg/L)								
Tetrachloroethene	<	<	<	<	<	<	<	<
Trichloroethene	<	<	<	<	<	<	<	<
cis-1,2-Dichloroethene	<	<	<	<	<	<	<	<
1,1-Dichloroethene	<	<	<	<	<	<	<	<
Miscellaneous (µg/L)								
Acetone	<	<	<	<	<	<	<	<
Trichlorofluoromethane	<	<	<	<	<	<	<	<

APPENDIX F.3
RADIOLOGICAL ANALYTES

APPENDIX F.3: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Result	Error	MDA	Result	Error	MDA
1090	UNCS	01/30/01	WRRP	2.02	0.93	0.31	12.3	1.28	0.09
1090	UNCS	07/26/01	WRRP	<MDA	.	1.88	<MDA	.	2.29
GW-141	LIV	01/23/01	WRRP	<MDA	.	1.7	<MDA	.	2.6
GW-141	LIV	07/17/01	WRRP	<MDA	.	1.63	<MDA	.	3.33
GW-142	KHQ	04/09/01	WRRP	<MDA	.	1.59	9.91	1.7	2
GW-142	KHQ	04/10/01	WRRP	<MDA	.	0.99	2.52	1.09	1.41
GW-142	KHQ	04/11/01	WRRP	1.21	0.72	0.82	2.65	1.28	1.82
GW-142	KHQ	04/12/01	WRRP	1.51	0.58	0.16	2.99	1.19	1.53
GW-142	KHQ	10/08/01	WRRP	1.99	0.95	1.02	7.7	1.31	1.44
GW-143	KHQ	04/09/01	WRRP	2.92	1.64	1.83	14.1	2.2	2.26
GW-143 Dup	KHQ	04/09/01	WRRP	<MDA	.	2.34	13.57	1.91	2.12
GW-143	KHQ	04/10/01	WRRP	3.23	1.48	1.6	16.9	1.97	1.93
GW-143	KHQ	04/11/01	WRRP	5.8	1.77	1.45	14.5	1.81	1.92
GW-143	KHQ	04/12/01	WRRP	2.81	1.38	1.54	15.64	1.85	1.76
GW-143	KHQ	10/08/01	WRRP	2.72	1.39	1.65	14.64	1.86	1.98
GW-144	KHQ	04/09/01	WRRP	1.81	1.11	1.47	<MDA	.	1.97
GW-144	KHQ	04/10/01	WRRP	2.2	0.88	0.9	2.79	1	1.25
GW-144	KHQ	04/11/01	WRRP	2.7	0.95	0.86	2.3	1.04	1.45
GW-144 Dup	KHQ	04/11/01	WRRP	2.98	1.01	0.88	1.71	1.12	1.63
GW-144	KHQ	04/12/01	WRRP	2.15	0.77	0.66	2.6	0.96	1.2
GW-144	KHQ	10/08/01	WRRP	5.25	1.69	1.65	3.73	1.9	2.2
GW-145	KHQ	04/09/01	WRRP	6.06	1.93	2.02	11	1.8	2.08
GW-145	KHQ	04/10/01	WRRP	6.6	1.48	1.16	10.2	1.38	1.42
GW-145	KHQ	04/11/01	WRRP	8.44	2.2	2.08	13.8	1.69	1.72
GW-145	KHQ	04/12/01	WRRP	7.86	1.8	1.48	12.05	1.45	1.43
GW-145	KHQ	10/08/01	WRRP	9.92	2.49	2.25	18.4	2.07	1.85
GW-174	CRSP	03/20/01	GWPP	<MDA	.	4.1	<MDA	.	7.2
GW-174	CRSP	08/21/01	GWPP	<MDA	.	4	<MDA	.	7.2
GW-175	CRSP	03/20/01	GWPP	<MDA	.	4.2	<MDA	.	7.4
GW-175	CRSP	08/20/01	GWPP	<MDA	.	4.3	<MDA	.	9.5
GW-177	CRSP	03/26/01	GWPP	<MDA	.	3.9	<MDA	.	9.5
GW-177 Dup	CRSP	03/26/01	GWPP	<MDA	.	3.3	<MDA	.	7.2
GW-177	CRSP	07/25/01	WRRP	<MDA	.	2.1	4.6	1.52	2.04
GW-180	CRSP	03/21/01	GWPP	<MDA	.	4.5	<MDA	.	6.3
GW-180	CRSP	08/21/01	GWPP	<MDA	.	3.4	<MDA	.	7.1
GW-180 Dup	CRSP	08/21/01	GWPP	<MDA	.	8.1	<MDA	.	7
GW-203	UNCS	01/30/01	WRRP	1.14	0.58	0.21	5.48	0.83	0.09
GW-203	UNCS	07/26/01	WRRP	<MDA	.	1.65	2.34	1.33	1.9
GW-205	UNCS	01/30/01	WRRP	3.33	1.23	0.32	66.26	3.24	0.11
GW-205	UNCS	07/26/01	WRRP	<MDA	.	2.25	68.38	3.28	2.21
GW-217	LIV	01/22/01	WRRP	<MDA	.	1.3	<MDA	.	1.8
GW-217	LIV	07/17/01	WRRP	<MDA	.	1.42	<MDA	.	2.95
GW-221	UNCS	01/30/01	WRRP	1.65	0.67	0.2	6.33	0.89	0.09
GW-221	UNCS	07/26/01	WRRP	<MDA	.	1.46	<MDA	.	1.86
GW-231	KHQ	04/09/01	WRRP	<MDA	.	1.46	<MDA	.	2.2
GW-231	KHQ	04/10/01	WRRP	<MDA	.	0.86	<MDA	.	1.48
GW-231	KHQ	04/11/01	WRRP	1	0.72	0.94	3.88	1.18	1.54
GW-231	KHQ	04/12/01	WRRP	1.88	1.15	1.1	4.44	1.98	1.89
GW-231	KHQ	10/08/01	WRRP	<MDA	.	0.83	1.79	1.02	1.45
GW-231 Dup	KHQ	10/08/01	WRRP	<MDA	.	1.24	3.45	1.58	1.83
GW-241	CRSDB	03/22/01	GWPP	<MDA	.	3.3	<MDA	.	7.2
GW-241	CRSDB	08/16/01	GWPP	<MDA	.	3.9	<MDA	.	11

APPENDIX F.3: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Result	Error	MDA	Result	Error	MDA
GW-301	CRBAWP	01/09/01	WRRP	<MDA	.	1.99	7.12	3.73	3.58
GW-301 Dup	CRBAWP	01/09/01	WRRP	<MDA	.	1.7	<MDA	.	3.26
GW-301	CRBAWP	07/11/01	WRRP	1.01	0.73	0.91	2.05	1.09	1.54
GW-301 Dup	CRBAWP	07/11/01	WRRP	<MDA	.	1.97	<MDA	.	1.76
GW-302	UNCS	01/31/01	WRRP	2.4	1.43	1.82	2.32	1.33	1.9
GW-302	UNCS	07/26/01	WRRP	<MDA	.	1.5	<MDA	.	1.82
GW-305	LIV	01/17/01	WRRP	<MDA	.	2.3	<MDA	.	2.3
GW-305	LIV	05/03/01	WRRP	<MDA	.	2.2	<MDA	.	2.1
GW-305	LIV	07/16/01	WRRP	<MDA	.	1.59	<MDA	.	3.18
GW-305	LIV	11/07/01	WRRP	<MDA	.	0.878	<MDA	.	2.86
GW-339	UNCS	01/30/01	WRRP	2.59	1.06	0.31	8.77	1.21	0.12
GW-339 Dup	UNCS	01/30/01	WRRP	1.75	0.64	0.16	11.43	1.04	0.07
GW-339	UNCS	07/26/01	WRRP	<MDA	.	2.37	<MDA	.	2.27
GW-339 Dup	UNCS	07/26/01	WRRP	<MDA	.	2.42	<MDA	.	2.39
GW-514	FCAP	03/28/01	GWPP	<MDA	.	3.3	<MDA	.	8.3
GW-514	FCAP	08/16/01	GWPP	<MDA	.	3.8	<MDA	.	8.8
GW-521	LIV	01/17/01	WRRP	<MDA	.	1.5	<MDA	.	2.1
GW-521	LIV	07/16/01	WRRP	<MDA	.	1.58	<MDA	.	2.82
GW-522	LIV	01/18/01	WRRP	<MDA	.	1.4	<MDA	.	1.7
GW-522	LIV	07/16/01	WRRP	<MDA	.	1.27	<MDA	.	2.76
GW-539	LII	01/23/01	WRRP	<MDA	.	1.5	<MDA	.	2.3
GW-539	LII	07/19/01	WRRP	<MDA	.	1.52	<MDA	.	3.26
GW-540	LII	01/24/01	WRRP	<MDA	.	2.2	3	1.5	2.4
GW-540	LII	07/19/01	WRRP	<MDA	.	1.79	3.08	1.6	2.99
GW-542	CDLVI	01/23/01	WRRP	<MDA	.	1.2	2.9	1.1	1.7
GW-542	CDLVI	07/24/01	WRRP	<MDA	.	0.894	<MDA	.	2.86
GW-543	CDLVI	01/24/01	WRRP	<MDA	.	2.6	<MDA	.	2.7
GW-543	CDLVI	07/23/01	WRRP	<MDA	.	1.77	<MDA	.	3.14
GW-544	CDLVI	01/24/01	WRRP	<MDA	.	2.4	3.1	1.7	2.6
GW-544	CDLVI	07/23/01	WRRP	<MDA	.	1.97	<MDA	.	3.07
GW-557	LV	01/17/01	WRRP	<MDA	.	1.6	<MDA	.	2
GW-557 Dup	LV	01/17/01	WRRP	<MDA	.	1.8	<MDA	.	1.8
GW-557	LV	07/18/01	WRRP	<MDA	.	1.53	<MDA	.	2.92
GW-557 Dup	LV	07/18/01	WRRP	<MDA	.	1.57	<MDA	.	2.97
GW-560	CDLVII	05/21/01	WRRP	<MDA	.	2.6	<MDA	.	2.8
GW-560	CDLVII	07/25/01	WRRP	1.01	0.67	0.943	<MDA	.	2.75
GW-560	CDLVII	11/06/01	WRRP	<MDA	.	1.07	<MDA	.	2.82
GW-562	CDLVII	05/21/01	WRRP	<MDA	.	3.8	6.2	2.4	3.5
GW-562	CDLVII	07/24/01	WRRP	<MDA	.	0.974	<MDA	.	2.99
GW-562	CDLVII	11/05/01	WRRP	<MDA	.	1.02	<MDA	.	2.74
GW-564	CDLVII	05/21/01	WRRP	<MDA	.	2.4	3.5	1.6	2.5
GW-564 Dup	CDLVII	05/21/01	WRRP	<MDA	.	2.6	<MDA	.	2.6
GW-564	CDLVII	07/24/01	WRRP	<MDA	.	0.804	7.89	1.8	2.86
GW-564 Dup	CDLVII	07/24/01	WRRP	<MDA	.	0.891	<MDA	.	2.83
GW-564	CDLVII	11/05/01	WRRP	<MDA	.	0.813	<MDA	.	3.03
GW-564 Dup	CDLVII	11/05/01	WRRP	<MDA	.	0.973	<MDA	.	2.75
GW-608	CRSP	03/21/01	GWPP	<MDA	.	4	13	5.8	8.5
GW-608	CRSP	08/20/01	GWPP	<MDA	.	4.1	11	5.8	8.8
GW-609	CRSP	01/10/01	WRRP	<MDA	.	1.56	<MDA	.	3.43
GW-612	CRSP	03/29/01	GWPP	<MDA	.	2.7	5.9	3.8	5.8
GW-612	CRSP	08/22/01	GWPP	6.1	3.1	3.6	<MDA	.	6.7

APPENDIX F.3: CY 2001 MONITORING DATA FOR THE CHESTNUT RIDGE HYDROGEOLOGIC REGIME
Radiological Analytes: Gross Alpha and Gross Beta Activity

Sampling Point	Location	Date Sampled	Program	Gross Alpha (pCi/L)			Gross Beta (pCi/L)		
				Result	Error	MDA	Result	Error	MDA
GW-709	LII	01/22/01	WRRP	<MDA	.	1.6	2.6	1.5	2.4
GW-709	LII	07/19/01	WRRP	<MDA	.	1.48	<MDA	.	2.92
GW-757	LII	01/22/01	WRRP	1.34	0.9	1.3	14.8	2.2	1.9
GW-757	LII	07/23/01	WRRP	<MDA	.	1.44	18.9	2.4	3.03
GW-796	LV	01/18/01	WRRP	2.6	1.2	1.6	22.4	2.8	1.7
GW-796	LV	07/18/01	WRRP	<MDA	.	1.29	<MDA	.	2.88
GW-797	LV	01/16/01	WRRP	<MDA	.	1.8	<MDA	.	2.4
GW-797	LV	07/23/01	WRRP	<MDA	.	1.57	<MDA	.	2.99
GW-798	CDLVII	01/08/01	WRRP	<MDA	.	2.13	<MDA	.	3.24
GW-798	CDLVII	05/21/01	WRRP	<MDA	.	2.3	<MDA	.	2.5
GW-798	CDLVII	07/11/01	WRRP	<MDA	.	1.13	<MDA	.	1.73
GW-798	CDLVII	07/25/01	WRRP	<MDA	.	0.984	<MDA	.	2.82
GW-798	CDLVII	11/05/01	WRRP	<MDA	.	0.818	<MDA	.	2.95
GW-799	LV	01/16/01	WRRP	<MDA	.	1.4	<MDA	.	1.9
GW-799	LV	07/18/01	WRRP	<MDA	.	1.49	<MDA	.	2.64
GW-801	LV	01/16/01	WRRP	<MDA	.	1.2	<MDA	.	1.7
GW-801	LV	07/18/01	WRRP	<MDA	.	1.3	<MDA	.	2.96
GW-827	CDLVI	01/24/01	WRRP	<MDA	.	1.4	1.9	1.2	1.8
GW-827	CDLVI	07/24/01	WRRP	<MDA	.	1.02	<MDA	.	2.82
GW-831	FCAP	01/08/01	WRRP	4.31	1.16	0.22	10.5	3.19	2.97
GW-831	FCAP	07/12/01	WRRP	<MDA	.	7.17	16.9	8.48	8.13
MCK 2.0	EXP-SW	02/22/01	WRRP	<MDA	.	27.53	115.02 Q	39.1	36.66
MCK 2.0	EXP-SW	08/14/01	WRRP	<MDA	.	1.27	5.08	1.07	1.13
MCK 2.05	EXP-SW	02/22/01	WRRP	112.59 R	62.98	59.46	273.06 R	80.14	74.36
MCK 2.05 Dup	EXP-SW	02/22/01	WRRP	1.11 R	1.2	1.78	4.97 R	1.41	1.8
MCK 2.05	EXP-SW	08/14/01	WRRP	<MDA	.	1.65	8.87	1.44	1.43
MCK 2.05 Dup	EXP-SW	08/14/01	WRRP	<MDA	.	1.5	7.28	1.09	1.06
OF 301	KHQ	04/24/01	WRRP	<MDA	.	1.12	<MDA	.	1.77
OF 301	KHQ	10/09/01	WRRP	2.39	0.93	0.73	3.26	1.27	1.72
SCR1.25SP	EXP-SW	02/22/01	WRRP	33.27 Q	26.08	25.48	<MDA	.	36.13
SCR1.25SP	EXP-SW	08/14/01	WRRP	2.07	1.12	1.24	1.69	1.23	1.45
SCR1.5SW	EXP-SW	02/19/01	GWPP	<MDA	.	2.8	<MDA	.	7
SCR1.5SW	EXP-SW	08/14/01	GWPP	<MDA	.	3.6	<MDA	.	9
SCR2.1SP	EXP-SW	02/20/01	GWPP	<MDA	.	3.3	<MDA	.	8.3
SCR2.1SP Dup	EXP-SW	02/20/01	GWPP	<MDA	.	3.3	<MDA	.	8.3
SCR2.1SP	EXP-SW	08/14/01	GWPP	<MDA	.	3.9	<MDA	.	8.8
SCR2.2SP	EXP-SW	02/19/01	GWPP	<MDA	.	4.3	<MDA	.	7.6
SCR2.2SP	EXP-SW	08/14/01	GWPP	<MDA	.	3.6	<MDA	.	7.6
SCR2.2SW	EXP-SW	02/19/01	GWPP	5.5	3	3.7	<MDA	.	8.1
SCR3.4SP	EXP-SW	02/20/01	GWPP	<MDA	.	3.3	<MDA	.	6.1
SCR3.5SP	EXP-SW	03/13/01	WRRP	1.13	0.73	0.87	1.92	1.1	1.57
SCR3.5SP	EXP-SW	08/14/01	WRRP	1.53	0.88	0.96	2.06	1.09	1.27
SCR4.3SP	EXP-SW	01/17/01	WRRP	<MDA	.	1.9	<MDA	.	1.9
SCR4.3SP	EXP-SW	07/16/01	WRRP	<MDA	.	1.55	3.31	1.5	2.86
SCR4.4SW	EXP-SW	02/20/01	GWPP	<MDA	.	3.5	<MDA	.	6.6
SCR4.4SW	EXP-SW	08/14/01	GWPP	<MDA	.	4.4	<MDA	.	8.2
SCR5.1SP	EXP-SW	02/20/01	GWPP	<MDA	.	3.6	<MDA	.	8.1
SCR5.1SP	EXP-SW	08/15/01	GWPP	<MDA	.	3.9	<MDA	.	8.7
SCR5.2SW	EXP-SW	02/19/01	GWPP	<MDA	.	3.5	<MDA	.	6.8
SCR5.2SP	EXP-SW	08/14/01	GWPP	<MDA	.	4.2	<MDA	.	9.4
SCR5.4SP	EXP-SW	02/20/01	GWPP	<MDA	.	3.5	<MDA	.	5.3
SCR5.4SP	EXP-SW	08/15/01	GWPP	<MDA	.	4.3	<MDA	.	11

APPENDIX G

CY 2001 QUALITY ASSURANCE/QUALITY CONTROL DATA

EXPLANATION

Sampling Point:

- BCK - Bear Creek Kilometer
GHK - Gum Hollow Branch Kilometer (surface water sampling location)
GW - Monitoring Well
LRSPW - Surface water station at the outfall of the New Hope Pond Distribution Channel
NPR - North of Pine Ridge near the Scarboro Community (surface water sampling location)
NT - Northern Tributary to Bear Creek
SCR - South Chestnut Ridge (tributary prefix for spring or surface water sampling location)
SS - Spring (Bear Creek Regime)
Dup - Field Duplicate Sample

Hydrogeologic Regime:

- BC - Bear Creek Hydrogeologic Regime
CR - Chestnut Ridge Hydrogeologic Regime
EF - Upper East Fork Poplar Creek Hydrogeologic Regime

Notes:

No volatile organic compounds were detected in any of the QA/QC samples. Therefore, data summaries showing detected results are not presented for CY 2001. This appendix shows the method (laboratory) blank and trip blank samples associated with each groundwater and surface water sample collected under management of the GWPP. Field blank samples were collected at well GW-226 (February 6 and August 15, 2001) in the Bear Creek Regime and at well GW-381 (May 1 and November 2, 2001) in the East Fork Regime. Two equipment rinsate samples were collected at well GW-722 in the East Fork Regime during CY 2001. The rinsate samples were analyzed for the standard suite of analytes (see Section 2.3), but only the constituents shown below were detected.

Well/Port	Date Sampled	pH	Conductivity ($\mu\text{mho}/\text{cm}$)	Turbidity (NTU)	Bicarbonate (mg/L)	Nitrate (mg/L)
GW-722-17	02/27/01	7.71	1.3	0.242	2.38	< 0.028
GW-722-17	08/22/01	6.39	1.7	0.088	< 1	0.0677

APPENDIX G: CY 2001 QUALITY ASSURANCE/QUALITY CONTROL DATA
Correlation with Associated Groundwater and Surface Water Samples

Sampling Point	Hydrogeologic Regime	Date Sampled	Sample Number	Trip Blank Sample Number	Method Blank Sample Number
BCK-00.63	BC	01/11/01	A010080179	A010080193	Q010180032
BCK-00.63	BC	07/11/01	A011910095	A011910105	Q012010188
BCK-04.55	BC	01/11/01	A010080180	A010080193	Q010180032
BCK-04.55	BC	07/12/01	A011910096	A011910106	Q012010188
BCK-04.55 Dup	BC	07/12/01	A011910097	A011910106	Q012010188
BCK-07.87	BC	01/11/01	A010080181	A010080193	Q010180032
BCK-07.87	BC	07/11/01	A011910100	A011910105	Q012010188
BCK-09.40	BC	01/10/01	A010080183	A010080192	Q010180033
BCK-09.40	BC	07/11/01	A011910102	A011910105	Q012010188
BCK-11.97	BC	01/10/01	A010080187	A010080192	Q010180033
BCK-11.97	BC	07/12/01	A011910111	A011910106	Q012040001
GHK2.51ESW	EF	05/23/01	A011170108	A011170112	Q011620177
GHK2.51WSW	EF	05/09/01	A011170109	A011170099	Q011370082
GHK2.51WSW	EF	11/27/01	A012840008	A012840009	Q013470000
GW-053	BC	02/12/01	A010250400	A010080197	Q010460074
GW-053	BC	07/25/01	A012040075	A012040080	Q012190000
GW-056	BC	03/14/01	A010720205	A010720217	Q010800005
GW-082	BC	02/13/01	A010250398	A010080198	Q010520181
GW-082	BC	07/26/01	A012040095	A012040081	Q012190000
GW-085	BC	02/05/01	A010250404	A010080195	Q010460000
GW-085 Dup	BC	02/05/01	A010250405	A010080195	Q010460000
GW-085	BC	08/01/01	A012040087	A012040083	Q012270000
GW-098	BC	03/13/01	A010380236	A010380195	Q010800005
GW-098	BC	08/08/01	A012070132	A012070177	Q012360026
GW-124	BC	03/19/01	A010380234	A010380196	Q010860006
GW-124	BC	08/09/01	A012070130	A012070178	Q012360026
GW-153	EF	04/26/01	A011080153	A011090002	Q011290019
GW-153	EF	10/23/01	A012830235	A012830242	Q013060102
GW-174	CR	03/20/01	A010380226	A010380199	Q010860006
GW-174	CR	08/21/01	A012050017	A012050033	Q012490150
GW-175	CR	03/20/01	A010380223	A010380199	Q010860006
GW-175	CR	08/20/01	A012050016	A012050032	Q012490150
GW-177	CR	03/26/01	A010380224	A010380202	Q011010000
GW-177 Dup	CR	03/26/01	A010380225	A010380202	Q011010000
GW-180	CR	03/21/01	A010380227	A010380200	Q010860007
GW-180	CR	08/21/01	A012050018	A012050033	Q012490150
GW-180 Dup	CR	08/21/01	A012050019	A012050033	Q012490150
GW-192	EF	04/24/01	A011080147	A011090000	Q011220104
GW-192	EF	10/17/01	A012830230	A012830220	Q013030246
GW-204	EF	05/23/01	A011170090	A011170112	Q011620177
GW-204	EF	09/05/01	A012470018	A012050037	Q012640043
GW-204	EF	11/12/01	A012850264	A012880064	Q013400090
GW-207	EF	05/02/01	A011170034	A011170068	Q011290020
GW-207	EF	10/30/01	A012830250	A012880066	Q013110121
GW-208	EF	05/02/01	A011170033	A011170068	Q011290020
GW-208	EF	10/30/01	A012830249	A012880066	Q013110121
GW-219	EF	05/24/01	A011170093	A011170113	Q011620178
GW-219	EF	11/06/01	A012850268	A012880062	Q013190054
GW-219 Dup	EF	11/06/01	A012850269	A012880062	Q013190054

APPENDIX G: CY 2001 QUALITY ASSURANCE/QUALITY CONTROL DATA
Correlation with Associated Groundwater and Surface Water Samples

Sampling Point	Hydrogeologic Regime	Date Sampled	Sample Number	Trip Blank Sample Number	Method Blank Sample Number
GW-220	EF	04/30/01	A011080154	A011090003	Q011290019
GW-220	EF	10/23/01	A012830236	A012830242	Q013060102
GW-225	BC	03/19/01	A010380233	A010380196	Q010860006
GW-225	BC	08/08/01	A012070128	A012070177	Q012320049
GW-225 Dup	BC	08/08/01	A012070129	A012070177	Q012320049
GW-226	BC	02/06/01	A010250403	A010080196	Q010460000
GW-226	BC	08/02/01	A012040078	A012040084	Q012270000
GW-226 Dup	BC	08/02/01	A012040079	A012040084	Q012270000
GW-240	EF	04/26/01	A011080152	A011090002	Q011290019
GW-240	EF	10/22/01	A012830234	A012830241	Q013060102
GW-241	CR	03/22/01	A010380219	A010380201	Q010860007
GW-241	CR	08/16/01	A012050014	A012050031	Q012360025
GW-251	EF	04/24/01	A011080148	A011090000	Q011220104
GW-251	EF	10/18/01	A012830231	A012830240	Q013030246
GW-311	BC	02/05/01	A010250401	A010080195	Q010460000
GW-311	BC	07/31/01	A012040076	A012040082	Q012190003
GW-315	BC	01/29/01	A010250399	A010080194	Q010450000
GW-315	BC	07/31/01	A012040096	A012040082	Q012190003
GW-364	BC	03/13/01	A010380230	A010380195	Q010800005
GW-364	BC	08/07/01	A012070126	A012070176	Q012320049
GW-365	BC	03/27/01	A010380231	A010380197	Q011010000
GW-365 Dup	BC	03/27/01	A010380232	A010380197	Q011010000
GW-365	BC	08/07/01	A012070127	A012070176	Q012320049
GW-381	EF	05/01/01	A011080156	A011090004	Q011290018
GW-381	EF	10/24/01	A012830239	A012830243	Q013060210
GW-383	EF	04/30/01	A011080155	A011090003	Q011290019
GW-383	EF	10/24/01	A012830237	A012830243	Q013060102
GW-383 Dup	EF	10/24/01	A012830238	A012830243	Q013060102
GW-514	CR	03/28/01	A010380218	A010380203	Q011010000
GW-514	CR	08/16/01	A012050013	A012050031	Q012360025
GW-537	BC	02/06/01	A010250406	A010080196	Q010460000
GW-537	BC	08/02/01	A012040088	A012040084	Q012270000
GW-608	CR	03/21/01	A010380222	A010380200	Q010860006
GW-608	CR	08/20/01	A012050015	A012050032	Q012490150
GW-612	CR	03/29/01	A010380228	A010870201	Q010960206
GW-612	CR	08/22/01	A012050020	A012050034	Q012490150
GW-616	BC	03/27/01	A010380235	A010380197	Q011010000
GW-616	BC	08/09/01	A012070131	A012070178	Q012360026
GW-620	EF	04/25/01	A011080149	A011090001	Q011220104
GW-620	EF	10/18/01	A012830232	A012830240	Q013030246
GW-627	BC	02/13/01	A010250407	A010080198	Q010520181
GW-627	BC	07/26/01	A012040089	A012040081	Q012190000
GW-653	BC	02/12/01	A010250397	A010080197	Q010460074
GW-653	BC	07/25/01	A012040094	A012040080	Q012190000
GW-656	EF	05/24/01	A011170091	A011170113	Q011620178
GW-656	EF	11/12/01	A012850265	A012880064	Q013400090
GW-683	BC	01/09/01	A010080001	A010080162	Q010180033
GW-683	BC	07/10/01	A011900146	A011900156	Q012010188
GW-684	BC	01/09/01	A010080000	A010080162	Q010180033

APPENDIX G: CY 2001 QUALITY ASSURANCE/QUALITY CONTROL DATA
Correlation with Associated Groundwater and Surface Water Samples

Sampling Point	Hydrogeologic Regime	Date Sampled	Sample Number	Trip Blank Sample Number	Method Blank Sample Number
GW-684	BC	07/10/01	A011900145	A011900156	Q012010188
GW-685	BC	03/14/01	A010720206	A010720217	Q010800005
GW-695	BC	01/16/01	A010080148	A010080163	Q010180032
GW-695	BC	07/16/01	A011900147	A011900157	Q012050084
GW-698	EF	05/23/01	A011170092	A011170112	Q011620177
GW-698	EF	11/13/01	A012850267	A013160044	Q013400090
GW-703	BC	01/22/01	A010080149	A010080164	Q010300203
GW-703	BC	07/16/01	A011900148	A011900157	Q012050084
GW-704	BC	01/23/01	A010080150	A010080165	Q010300126
GW-704	BC	07/17/01	A011900154	A011900158	Q012130202
GW-706	BC	01/23/01	A010080151	A010080165	Q010300126
GW-706 Dup	BC	01/23/01	A010080152	A010080165	Q010300126
GW-706	BC	07/17/01	A011900155	A011900158	Q012130202
GW-722-06	EF	02/20/01	A010510207	A010510220	Q010680000
GW-722-06	EF	07/31/01	A012120157	A012120185	Q012190003
GW-722-10	EF	02/21/01	A010530024	A010530026	Q010640002
GW-722-10	EF	08/02/01	A012140209	A012140208	Q012260024
GW-722-14	EF	02/26/01	A010570147	A010570149	Q010800000
GW-722-14 Dup	EF	02/26/01	A010570148	A010570149	Q010800000
GW-722-14	EF	08/07/01	A012190356	A012190357	Q012320048
GW-722-17	EF	02/26/01	A010580109	A010580108	Q010800000
GW-722-17	EF	08/08/01	A012200422	A012200424	Q012360045
GW-722-17 Dup	EF	08/08/01	A012200423	A012200424	Q012360045
GW-722-20	EF	02/22/01	A010530179	A010530177	Q010640002
GW-722-20	EF	08/07/01	A012190355	A012190357	Q012320048
GW-722-22	EF	02/22/01	A010530178	A010530177	Q010640002
GW-722-22	EF	08/02/01	A012140210	A012140208	Q012260024
GW-722-26	EF	02/20/01	A010520110	A010520108	Q010640000
GW-722-26	EF	08/01/01	A012130246	A012130247	Q012260024
GW-722-30	EF	02/20/01	A010520109	A010520108	Q010680000
GW-722-30	EF	07/31/01	A012120156	A012120185	Q012190003
GW-722-32	EF	02/21/01	A010520226	A010520225	Q010640000
GW-722-32	EF	08/01/01	A012130244	A012130247	Q012260024
GW-722-33	EF	02/21/01	A010520227	A010520225	Q010640002
GW-722-33	EF	08/01/01	A012130245	A012130247	Q012260024
GW-724	BC	01/25/01	A010080155	A010080167	Q010330128
GW-724	BC	07/19/01	A011900152	A011900160	Q012050084
GW-725	BC	01/22/01	A010080156	A010080164	Q010300203
GW-725	BC	07/19/01	A011900153	A011900160	Q012050084
GW-735	EF	05/08/01	A011170040	A011170071	Q011370082
GW-735	EF	11/01/01	A012830255	A012880068	Q013110055
GW-735 Dup	EF	11/01/01	A012830256	A012880068	Q013110055
GW-738	BC	01/24/01	A010080154	A010080166	Q010300126
GW-738	BC	07/18/01	A011900151	A011900159	Q012050084
GW-740	BC	01/24/01	A010080153	A010080166	Q010300126
GW-740	BC	07/18/01	A011900149	A011900159	Q012050084
GW-740 Dup	BC	07/18/01	A011900150	A011900159	Q012050084
GW-744	EF	05/07/01	A011170037	A011170070	Q011370082
GW-744	EF	10/31/01	A012830252	A012880067	Q013110055

APPENDIX G: CY 2001 QUALITY ASSURANCE/QUALITY CONTROL DATA
Correlation with Associated Groundwater and Surface Water Samples

Sampling Point	Hydrogeologic Regime	Date Sampled	Sample Number	Trip Blank Sample Number	Method Blank Sample Number
GW-747	EF	05/07/01	A011170038	A011170070	Q011370082
GW-747	EF	10/31/01	A012830253	A012880067	Q013110121
GW-750	EF	05/03/01	A011170039	A011170069	Q011290020
GW-750	EF	11/01/01	A012830254	A012880068	Q013110121
GW-763	EF	04/25/01	A011080150	A011090001	Q011220104
GW-763 Dup	EF	04/25/01	A011080151	A011090001	Q011220104
GW-763	EF	10/22/01	A012830233	A012830241	Q013060102
GW-769	EF	04/17/01	A011060025	A011060040	Q011220108
GW-769	EF	10/16/01	A012830214	A012830219	Q012980001
GW-770	EF	04/17/01	A011060024	A011060040	Q011220108
GW-770	EF	10/15/01	A012830213	A012830218	Q012980001
GW-771	EF	05/22/01	A011170085	A011170111	Q011620177
GW-771	EF	11/05/01	A012850260	A012880061	Q013120001
GW-772	EF	05/22/01	A011170086	A011170111	Q011620177
GW-772 Dup	EF	05/22/01	A011170087	A011170111	Q011620177
GW-772	EF	11/06/01	A012850261	A012880062	Q013190054
GW-782	EF	04/18/01	A011060030	A011060041	Q011220096
GW-782 Dup	EF	04/18/01	A011060031	A011060041	Q011220096
GW-782	EF	09/05/01	A012470019	A012050037	Q012640043
GW-782	EF	10/16/01	A012830217	A012830219	Q013030246
GW-784	EF	05/21/01	A011170088	A011170110	Q011620177
GW-784	EF	11/07/01	A012850262	A012880063	Q013190054
GW-785	EF	05/21/01	A011170089	A011170110	Q011620177
GW-785	EF	11/07/01	A012850263	A012880063	Q013190054
GW-789	EF	04/16/01	A011060023	A011060039	Q011220108
GW-789	EF	10/15/01	A012830212	A012830218	Q012980001
GW-791	EF	04/19/01	A011060026	A011060042	Q011220096
GW-791	EF	10/17/01	A012830215	A012830220	Q012980001
GW-791 Dup	EF	10/17/01	A012830216	A012830220	Q012980001
GW-816	EF	05/03/01	A011170035	A011170069	Q011290020
GW-816 Dup	EF	05/03/01	A011170036	A011170069	Q011290020
GW-816	EF	10/31/01	A012830251	A012880067	Q013110055
GW-829	BC	01/29/01	A010250402	A010080194	Q010450000
GW-829	BC	08/01/01	A012040077	A012040083	Q012270000
LRSPW	EF	05/02/01	A011170045	A011170068	Q011290020
LRSPW	EF	10/30/01	A012830248	A012880066	Q013110121
NPR07.0SW	EF	05/09/01	A011170104	A011170099	Q011370082
NPR07.0SW Dup	EF	05/09/01	A011170105	A011170099	Q011370082
NPR07.0SW	EF	11/27/01	A012840003	A012840009	Q013470000
NPR12.0SW	EF	05/09/01	A011170107	A011170099	Q011370082
NPR12.0SW	EF	11/27/01	A012840004	A012840009	Q013470000
NPR23.0SW	EF	05/09/01	A011170106	A011170099	Q011370082
NPR23.0SW	EF	11/27/01	A012840005	A012840009	Q013470000
NT-01	BC	01/10/01	A010080189	A010080192	Q010180033
NT-01	BC	07/12/01	A011910099	A011910106	Q012040001
SCR1.5SW	CR	02/19/01	A010380208	A010380192	Q010640001
SCR1.5SW	CR	08/14/01	A012050021	A012050035	Q012360045
SCR2.1SP	CR	02/20/01	A010380211	A010380193	Q010640001
SCR2.1SP Dup	CR	02/20/01	A010380212	A010380193	Q010640000

APPENDIX G: CY 2001 QUALITY ASSURANCE/QUALITY CONTROL DATA
Correlation with Associated Groundwater and Surface Water Samples

Sampling Point	Hydrogeologic Regime	Date Sampled	Sample Number	Trip Blank Sample Number	Method Blank Sample Number
SCR2.1SP	CR	08/14/01	A012050024	A012050035	Q012360045
SCR2.2SP	CR	02/19/01	A010380209	A010380192	Q010640001
SCR2.2SP	CR	08/14/01	A012050022	A012050035	Q012360045
SCR2.2SW	CR	02/19/01	A010380210	A010380192	Q010640001
SCR3.4SP	CR	02/20/01	A010380213	A010380193	Q010640000
SCR4.4SW	CR	02/20/01	A010380214	A010380193	Q010640000
SCR4.4SW	CR	08/14/01	A012050027	A012050035	Q012360026
SCR5.1SP	CR	02/20/01	A010380217	A010380193	Q010680000
SCR5.1SP	CR	08/15/01	A012050030	A012050036	Q012360025
SCR5.2SW	CR	02/19/01	A010380216	A010380192	Q010680000
SCR5.2SP	CR	08/14/01	A012050029	A012050035	Q012360026
SCR5.4SP	CR	02/20/01	A010380215	A010380193	Q010640000
SCR5.4SP	CR	08/15/01	A012050028	A012050036	Q012360025
SS-1	BC	01/10/01	A010080188	A010080192	Q010180033
SS-1	BC	07/12/01	A011910098	A011910106	Q012010188
SS-4	BC	01/11/01	A010080184	A010080193	Q010180032
SS-4 Dup	BC	01/11/01	A010080185	A010080193	Q010180032
SS-4	BC	07/11/01	A011910104	A011910105	Q012010188
SS-5	BC	01/11/01	A010080182	A010080193	Q010180032
SS-5	BC	07/11/01	A011910101	A011910105	Q012010188

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